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The Genesis of Cancer

A Study in the History of Ideas

L. J. Rather

From the Hippocratic writings on the nature cancer in the fifth century B.C. to the discoveries tissue and cell function in the nineteenth centu L. J. Rather traces the history of theories of can genesis. Rather's book is the first comprehens history of the ideas of tumor genesis, and as such, uniquely important and original contribution medical and historical literature The historian science and medicine, as well as the medi professional in any cancer-related area will f much of interest in this scholarly view of one mankind's most puzzling and persistent diseases.

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THE AMERICAN MEDICAL PROFESSION AND PUBLIC HEALTH: FROM SUPPORT TO AMBIVALENCE*

JOHN DUFFY

In the early 19th century medicine was scarcely a profession, and public health was neither an academic discipline nor institutionalized into health departments. A profession presupposes a group holding a specialized body of knowledge and backed by a legally sanctioned monopoly, a situation which was certainly not true of American physicians at this time. Aside from laws regulating markets and public nuisances, public health was of concern only when one or more of the periodic major epidemics ravaged a community. Most physicians were too preoccupied with making a living to worry about larger social concerns, and those whose educational background and financial position gave them a broader vision devoted most of their energy to attempting to raise the qualifications and social status of the profession.

While a few physicians, such as Benjamin Rush of Philadelphia, David Hosack and John H. Griscom of New York, and Edward H. Barton of Louisiana, were deeply concerned with public health, most practitioners considered their role to be that of the healer. By the mid-century soaring death tolls from yellow fever in the southern coastal cities, the devastation throughout the United States wrought by two outbreaks of Asiatic cholera, and a growing awareness among upper classes of the appalling misery and degradation of the urban poor led to the formation of citizens' groups. Generally called sanitary or hygiene associations, these organizations emphasized the need to clean the cities and to provide the inhabitants with pure air, water, and food. Physicians were always active members, but these lay

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* Presidential address delivered at the annual meeting of the American Association for the History of Medicine, Kansas City, Mo., May 11, 1978.

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organizations were the main force leading to the establishment of permanent health boards and departments.

In the immediate pre-Civil War years, neither the AMA nor state and local medical societies were influential enough to have any major impact upon public policy. The AMA appointed a Committee on Public Hygiene in 1848 to report on the sanitary condition of the ten major American cities, but, as with Lemuel Shattuck's Report on Massachusetts, little came of it. Other than the few minor public health developments which arose from the 1849 Asiatic cholera epidemic, the one brief revival of interest in public health prior to the Civil War was led by Dr. John Wilson Jewell of Philadelphia, a member of the city board of health. In the 1850s a series of devastating yellow fever epidemics struck at southern ports and threatened every coastal city in America. Quarantine laws and procedures varied widely from city to city, and Jewell and his cohorts hoped that some measure of standardization could be achieved. Over and above this was the basic issue of quarantine versus sanitation. Although the first meeting was called a quarantine convention, its delegates resolved early in the meeting that yellow fever was not contagious *per se* but was propagated in a foul or infectious atmosphere, a clear statement of the sanitationist viewpoint. The initial call for a meeting in Philadelphia requested health boards, boards of trade, and medical societies to send delegates. Significantly, of the 73 delegates at the first meeting 51 were physicians. In his welcoming address Dr. Jewell described public health as "a field of learning almost unexplored in this country" and one which "lies almost a dreary waste in our annals of progressive science." The successful exchange of views on quarantine and other health subjects in Philadelphia led to three more conventions in other cities. The last meeting was held in Boston in June of 1860 and was attended by 191 delegates, of whom 118 were physicians.[1] The meetings which drew representatives from almost every coastal state proved quite successful and, had it not been for the Civil War, they might well have led to a permanent national public health organization.

Although the sectional conflict brought an end to the national quarantine and sanitary conventions, the extent of disease in crowded army camps clearly demonstrated the value of personal and public hygiene and thus strengthened the sanitary movement. Moreover, sanitary measures proved their value in other situations. For example, in New Orleans, General Benjamin F. Butler met the omnipresent threat of yellow fever during the Federal occupation by rigidly enforcing the quarantine laws and embarking upon a massive cleansing of the city. To the amazement of the natives, many of whom had been cheerfully predicting the disastrous impact of yellow fever upon their Yankee conquerors, New Orleans remained free of the disease throughout the war.[2] A considerable element of luck must have been involved in the success of General Butler's program, but his combined sanitary and quarantine measures undoubtedly contributed to the relatively good health of the city's population.

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[1] Harold M. Cavins, "The National Quarantine and Sanitary Convention 1857 to 1860 and the beginnings of the American Public Health Association," *Bull Hist. Med.*, 1943, *13*· 404, 412.

At least as important as the military experiences to the cause of public health reform was the fight during the war to establish an effective health department for New York City. Initiated by Dr. John H. Griscom in the 1840s, the struggle intensified in the early 1860s and culminated in the creation of the Metropolitan Board of Health in 1866. Although the movement was backed by many organizations, lay and medical alike, physicians played a major role in securing passage of the final act. Doctors such as Elisha Harris, Joseph M. Smith, Stephen Smith, and Willard Parker participated actively in the campaign, working with both medical and citizens' associations.[3] The example of New York stimulated Chicago and other major cities to embark upon public health programs. By this date the sanitary reform movement in Western Europe was in full swing. In addition to aesthetic and humanitarian advantages, the advocates of public health argued that the elimination of disease was sound economics. Later, as the germ theory became accepted, they could appeal to community leaders and businessmen on the grounds of self-interest. Infection among the poor was now known to be a potential danger to all classes.

The United States lagged behind Western Europe in the creation of governmental health agencies. The first health departments, as indicated earlier, arose in major cities, but by the 1870s state health boards were coming into existence. As late as 1900, however, few of them were adequately funded. The 1870s also saw the founding of the American Public Health Association, an organization intended, as its first president, Dr. Stephen Smith, stated, to embrace officials of health organizations and "citizens interested in sanitation."[4] Significantly, the founders were primarily physicians, most of whom were active in their local medical societies and the AMA.

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[2] John Duffy, *The Rudolph Matas History of Medicine in Louisiana*, 2 vols. (Baton Rouge: Louisiana State University Press, 1958-1962), II, pp. 322-27

[3] John Duffy, *A History of Public Health in New York City, 1625-1866* (New York: Russell Sage Foundation, 1968), pp 540 ff.

[4] Mazyck P Ravenal, *A Half Century of Public Health* (New York American Public Health Association, 1921), p. 10.

At the first meeting of the American Public Health Association in 1872 Dr. C. C. Cox, President of the Washington, D.C. Board of Health, appealed for a national health department. Neither at this nor the following meeting, at which Dr. Cox presented a more concrete proposal, was any action taken. Strange as it may seem in this day of massive federal involvement in all aspects of society, the issue of states' rights was still a major force in American history, and the APHA consisted largely of state and municipal health officers, all of whom were jealous of their authority. In 1875 the Association considered two other proposals. Dr. John M. Woodworth, head of the United States Marine Hospital Service, recommended strengthening the Service and broadening its quarantine authority. At the same meeting Dr. John S. Billings urged the establishment of a national agency to make a systematic sanitary survey of the United States and to continue collecting health information. The following year, 1876, the Association expressed support for both proposals.[5]

In the meantime, Dr. Woodworth had interpreted the original law of 1799 creating the Service to include the authority to gather information about yellow fever and Asiatic cholera, the two main diseases then threatening the United States. Two successive cholera epidemics in 1867 and 1873 and several yellow fever outbreaks, including a major one in 1878, increased public demand for federal quarantine laws. The pressure for action at the national level was stimulated by a widespread suspicion throughout the Mississippi Valley that the Louisiana quarantine regulations were grossly inadequate and that for commercial reasons the New Orleans authorities were guilty of concealing early cases of yellow fever. The accusation was not without justice, for the medical profession in New Orleans was as sharply divided as ever. In 1867 the *New Orleans Medical and Surgical Journal* declared that quarantine laws had never been effective. Reflecting business opposition to quarantine regulations, 63 physicians in 1875 petitioned the New Orleans Board of Health to relax its quarantine procedures. In the following two years the state legislature not only gave the Board a freer hand in applying the quarantine laws but also enabled the New Orleans city council to choose the majority of its members, thus making the Board more susceptible to control by commercial interests. The effect was to maintain the principle of quarantine but to nullify its effectiveness.[6]

Whatever the practitioners in New Orleans may have thought, public opinion throughout the country generally favored quarantine measures, and clearly some type of national legislation was needed. In April of 1878 Congress responded by passing a Quarantine Act. This act, which gave the Hospital Service the right to make regulations with respect to vessels suspected of having disease aboard, was greatly weakened by an amendment stating that its rules could not conflict with those of states or municipalities. Even more serious was the failure of Congress to appropriate funds to enforce the act.

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[5] For a discussion of these developments, see Bess Furman, *A Profile of the United States Public Health Service, 1798-1948* (Bethesda, Md.: National Library of Medicine, 1973), pp. 129 ff.

[6] Duffy, *Matas History of Medicine in Louisiana*, II, pp 469-70.

The weakness of the measure was tragically revealed in the summer and fall when a major yellow fever outbreak struck New Orleans and then spread swiftly up the Mississippi River, spreading panic and death on an unprecedented scale. Understandably, the epidemic was blamed upon the negligence of the Louisiana quarantine authorities, thus strengthening the demand for a national law. Capitalizing upon public indignation, Dr. Billings and his associates in the APHA pressured Congress into establishing a National Board of Health in March of 1879. In so doing, they outmaneuvered Surgeon General Woodworth who was attempting to establish a bureau of health under the auspices of the U.S. Marine Hospital Service. The victory was a costly one, however, for by incurring the enmity of the USPHS, its supporters unwittingly contributed to shortening the life of the National Board.[7]

From the immediate standpoint, the National Board was in a strong position. Shortly after its founding the Board was given $500,000 for grants-in-aid to states to encourage them to establish proper sanitary regulations, was given funds for research and publications, and was provided with far stronger powers than those originally given to the USPHS under the National Quarantine Act of 1878. During its first year or so it was quite active, but the Board soon encountered difficulties from two powerful enemies: first, the majority of state and municipal officials who were resentful of interference by the federal government; and second, as indicated earlier, the USPHS led by Woodworth's successor, Dr. John B. Hamilton. Both opponents were skilled at political in-fighting, and in 1883 the National Board found itself deprived of all funds.

The precise role of medicine in promoting public health during these years is difficult to ascertain. Medical journals and society transactions clearly give the impression of strong backing for sanitary measures, and medical societies claimed credit for much of the health legislation. On April 18, 1866,

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[7] The best history of the National Board of Health is Peter W. Bruton, "The National Board of Health," Ph.D. dissertation, University of Maryland, 1974

President James Anderson of the New York Academy of Medicine declared that the Metropolitan Board of Health Bill "originated in the Academy of Medicine" and "should be regarded as the legitimate offspring of the Academy," a statement which disregarded the key role of the Citizens' Association and other lay groups on its behalf.[8] In 1874 the *New Orleans Medical and Surgical Journal* editorialized on the need for local health boards with broad powers.[9] Two years later the vice president of the New York Academy of Medicine also proclaimed the need for local, state, and a national board of health. That "enlightened nations" were moving in this direction, he added, was "due to the persistent assiduity of our profession in pressing upon communities the important results to be derived from such organizations."[10]

The years which saw the beginning of the public health movement coincided with the professionalization of medicine and the accompanying drive for effective medical licensure laws. Many physicians who espoused the creation of health boards assumed that these agencies could be used to license and limit the supply of physicians. In an address before the AMA in 1878, Dr. H. O. Johnson suggested that state health boards were the most effective method for controlling the practice of medicine.[11] As state boards came into existence, many of them were given the responsibility of enforcing the licensure laws. Understandably, irregular practitioners looked askance at the efforts by orthodox physicians to establish health boards. An eclectic physician in Ohio declared that in promoting a board of health with licensure powers the regular physicians were using public health as "a thin glossing of sugar coating" to cover their scheme for monopolizing the practice of medicine.[12] This fight between the regulars and irregulars delayed the formation of state health boards in some instances and in others limited the powers of the ones which were established.

All was not harmony, however, even between the regular physicians and the public health agencies they promoted. In 1880 the AMA's Section on State Medicine and Public Hygiene passed a resolution endorsing the National Board of Health, but not before a New Jersey physician proposed a resolution denouncing the "centralized imperial character of the present Board" and accusing it of extravagance and inefficiency.[13] Although physicians continued to claim credit for the passage of health legislation, it is clear that medical societies played only a supportive role. Dr. Fordyce Barker, in delivering an inaugural address before the New York Academy of Medicine in 1881, referred to the Academy as "the fountainhead of whatever excellence New York may boast as to sanitary regulations," yet his major aim was to urge support for the New York Sanitary Reform Society, a lay organization which had drawn up a bill to improve sanitary conditions in the city.[14] As was frequently the case, instead of actively proposing health reform, the Academy was content to take the passive role of assenting to or supporting proposed measures. Four years later Dr. Abraham Jacobi called for a larger and more active membership in the Academy so that the city's physicians could assert their role as the "natural advisers in all matters concerning sanitation and health." If New York City's two medical societies would speak with authority on health matters, he declared, "it will no longer depend upon a number of ladies only to remove intolerable nuisances from the heart of the city," a reference to the Ladies Protective Health Association.[15]

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[8] Minutes of the New York Academy of Medicine (1862-1884), April 18, 1866, II, p. 75, New York Academy of Medicine Manuscript (Hereinafter cited as NYAM).

[9] *New Orleans Med. & Surg J.*, 1973-74, n s. *1:* 631-35.

[10] Gouverneur M. Smith, "Epidemics of the century, and the lessons derived from them," *Transactions*, NYAM, 1876, 2nd ser. *2:* 387.

[11] William G. Rothstein, *American Physicians in the 19th Century· From Sects to Science* (Baltimore & London: Johns Hopkins University Press, 1972), pp. 210-11.

[12] *Ibid.*

Their claims notwithstanding, local and state medical societies and the AMA were too preoccupied with their organizational problems to devote much attention to educating the public on health matters. The AMA, with the exception of a few committees, accomplished little between its annual conventions. Dr. Henry J. Bigelow complained in 1871 that the

> American Medical Association is a body of medical gentlemen, practically volunteer delegates, having primarily in view the agreeable and commendable object of a journey to break the monotony of medical practice and give them an apology for leaving their homes and their patients at a pleasant season of the year.[16]

Despite Dr. Bigelow's complaint, virtually all of the early presidents and officers of the APHA were also active members of the AMA and its constituent societies. Although the AMA represented only a small percentage of physicians in the late 19th century, it included most of the leaders in medical education and public health. In general these individuals were an elite group of well-to-do physicians, complete with undergraduate degrees and often

[13] *Sanitarian*, July 1880, *8*. 300

[14] Fordyce Barker, *Second Inaugural Address Delivered before the New York Academy of Medicine*, February 3, 1881 (New York, 1881), pp. 13-20; in *NYAM Presidential Addresses*, 1847-1885.

[15] Abraham Jacobi, *Inaugural Address . . New York Academy of Medicine*, February 5, 1885, p. 10, *ibid.*

[16] Rothstein, *American Physicians in the 19th Century*, p 200.

with European medical training. Many of them represented the informed social-conscious element in the middle class who were genuinely concerned with human welfare. Untroubled by the economic insecurity that characterized most members of the medical profession, they were dedicated to improving the health of their fellow citizens, regardless of the immediate effect upon private medical practice.

While motivated to a considerable degree by humanitarianism, those same individuals who fought for public health and welfare were acutely conscious of the need to raise the professional qualifications and status of physicians. In laying claim to expertise in public health, they were naturally led to carve out an area of specialized knowledge. Laboratory medicine was leading the profession into the new world of science, and scientific medicine opened wide vistas to public health. Health clearly lay in the purview of the medical profession, the only group qualified to direct the fight against pathogenic organisms. As diseases were conquered and the quality of life improved, it would become clear that orthodox physicians were the true guardians of public health.

The average practitioner, eking out a bare living, often with the aid of a drugstore, small business or farm, and fighting fierce competition from his colleagues, irregulars, midwives, folk practitioners, and outright quacks, was too preoccupied with securing his daily bread to devote much attention to the larger concerns of human welfare. His primary concern was trying to build a practice among patients who could afford to pay. Not surprisingly, when the AMA broadened its membership to include the majority of practicing physicians and democratized its organization, its aims moved in the direction of improving the economic and social position of its members.

Early in the 19th century two developments in medicine appeared threatening to private practitioners, the emergence of dispensaries and hospitals and the establishment of medical school clinics. As early as 1852 several resolutions were introduced in the New York Academy of Medicine denouncing the free medical care provided by the medical college clinics and dispensaries. One resolution declared that such charity was degrading to the profession; another called for the total abolition of all dispensaries and clinics; while a third asserted that all gratuitous medical aid, wherever tended, savored of "quackery."[17] Although all three resolutions were tabled, the outcries against dispensary medicine increased as these institutions multiplied. Ironically the medical profession played the key role in their establishment—in part for humanitarian reasons, in part to provide clinical training for their students, and later to help physicians acquire experience and training in specialty areas. Here again it was the better trained and more affluent physicians who promoted clinics and dispensaries.

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[17] Minutes of NYAM, April 7, 1952, pp. 288-89.

Despite occasional protests, dispensaries blossomed in every major city, and by the end of the 19th century they were providing medical services for hundreds of thousands of patients. New York City alone had 64 dispensaries by 1893, and in 1900 almost 900,000 patients received dispensary treatment.[18] The peak of the dispensary movement came at a time when medicine was in a state of transition. Major advances in medical knowledge were providing physicians with considerable expertise and medical education was undergoing a radical change. While these developments augured well for the future, they brought no immediate benefit to private practitioners. Just at a time when the physician's public image was improving, he was facing sharply intensified competition from within his own ranks. Between 1880 and 1900 approximately 60 new medical schools came into existence, increasing the total number of schools by over 60 percent.[19] In addition, the general practitioner felt threatened by the growth of specialists. Hence, in a period of rising prices and increasing professional respectability, the doctor found his economic position deteriorating, and it is not surprising that many physicians became bitter over the number of free medical services available to lower income groups. Preoccupied with building a practice, they fixed their view upon the relatively small percentage of dispensary patients who could afford private care and overlooked the vast majority of working poor who were of legitimate concern to the dispensaries. By coincidence, the outcry against free medical care reached its peak precisely at a time when public health was attempting to deal with tuberculosis and other disorders whose treatment and prevention involved changing the social milieu. Consequently the physicians' fears and resentment of state intervention into private medicine played a major role in shaping public health policies in the 20th century.

This suspicion of governmental interference was clearly demonstrated in the 1890s when health departments began the bacteriological examinations of suspected diphtheria cases and started producing antitoxins. When the

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[18] Charles E. Rosenberg, "Social class and medical care in nineteenth-century America. The rise and fall of the dispensary," *J. Hist. Med. & Allied Sci.*, Jan. 1974, *29:* 33; Minutes of the Section on Public Health, NYAM, Nov 30, 1893, p. 83.

[19] Martin Kaufman, *American Medical Education, The Formative Years· 1765-1910* (Westport, Conn.: Greenwood Press, 1976), p 120.

New York City Health Department notified physicians that the quarantine of diphtheria patients must remain in force until laboratory results proved negative, many doctors were outraged. A number of them even objected to the use of diphtheria antitoxin. During an 1895 epidemic many Illinois physicians refused to administer antitoxin until the health department used its own personnel to demonstrate the value of this new form of therapy.[20]

Opposition to diphtheria measures was mild compared to the reaction of private physicians to ordinances requiring that tuberculosis be reported. In 1893 Dr. Hermann M. Biggs persuaded the Health Department of New York to urge private physicians to report tuberculosis cases. This voluntary program, however, had little success. In addition to those conservative physicians still dubious of the germ theory, there were others who believed that tuberculosis was a constitutional or hereditary affliction; hence they did not consider it communicable. Moreover, many insurance companies inserted clauses in their policies limiting payment of benefits in the event of death from tuberculosis. The intimate relationship between the physician and his patient's family in the upper class and the danger of losing his fee among the lower economic groups tended to discourage reporting a disease which might have serious economic consequences to the family.

When it became obvious that voluntary measures were inadequate, in January 1897 reporting tuberculosis cases was made compulsory. The immediate reaction was violent, for without exception local medical societies and journals joined in denouncing the decision, several of them even expressing doubts as to the communicability of tuberculosis. The *Medical Record* called the ordinance "dictatorial and defiantly compulsory," and the Medical Society of the County of New York unanimously resolved that the board's edict was "unnecessary, inexpedient, and unwise." When the Board of Health refused to back down, the medical societies turned to the state legislature in an effort to reduce the Board's powers.[21] Fortunately, they did not succeed, but it was 1900 before the New York profession recognized the value of the Health Department's policy. The reaction of New York physicians was in no sense unique. The College of Physicians in Philadelphia resolved, at the instigation of the respected Dr. Weir Mitchell, "that the attempt to register consumptives and to treat them as the subjects of contagious disease would be adding hardship to the lives of these unfortunates, stamping them as outcasts of society."[22] Implicit in the arguments against reporting tuberculosis was the assumption that while regulations were necessary for the poor in their filthy hovels and tenements, they were scarcely necessary for the respectable middle-class families living in good homes.[23]

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[20] John Duffy, *A History of Public Health in New York City, 1866-1966* (New York: Russell Sage Foundation, 1974), pp. 99, 101; Rothstein, *American Physicians in the 19th Century*, p. 277.

[21] Duffy, *History of Public Health in New York City, 1866-1966*, pp. 103-104.

By the early 1900s medicine had undergone a radical transformation. The germ theory was accepted, and the early opposition to antitoxins and other laboratory developments had quickly dissipated. These same years also saw the peak of the Progressive Movement, an era of profound social, cultural, and economic alterations. Indicative of the medical profession's adaptation to societal changes was its role vis-a-vis venereal disease. When the APHA considered a resolution in 1882 proposing that it take a more active stance against venereal disease, the motion was defeated. In opposing it, John Shaw Billings declared that it would be "injudicious and unwise" for a body which included laymen to even discuss a topic which was "purely a medical one. . . ." As late as 1899 Howard Kelly of Johns Hopkins objected to discussing "the hygiene of the sexual act" at the AMA meeting on the grounds that "the discussion of the subject is attended with filth and we besmirch ourselves by discussing it in public."[24]

Fortunately, Dr. Prince A. Morrow, a prominent New York physician who was aware of the ramifications of venereal disease, determined to remove the veil of silence and almost single-handedly helped to bring the subject into the open. Yet Morrow was able to succeed only because the medical profession—and the public—was receptive to change. By 1907 even so conservative a publication as the *New Orleans Medical and Surgical Journal* carried an article entitled "The Venereal Peril and Public Apathy" in which the author declared the only hope was to educate the public.[25] Nonetheless, the New York City Health Department hesitated for many years before issuing an order in 1912 requiring notification of venereal disease cases by all public institutions. Even then physicians were required to report only the number of their private cases. As Dr. Hermann Biggs explained, the Health Department was reluctant to deal with venereal diseases

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[22] C E. A. Winslow, *The Life of Hermann M Biggs . . Physician and Statesman of the Public Health* (Philadelphia: Lea & Febiger, 1929), p. 139.

[23] Burton J. Bledstein, *The Culture of Professionalism The Middle Class and the Development of Higher Education in America* (New York: Norton, 1976), p. 93.

[24] Barbara Gutmann Rosenkrantz, "Cart before horse: Theory, practice and professional image in American public health, 1870-1920," *J. Hist. Med. & Allied Sci.*, 1974, *29.* 62, John C. Burnham, "The Progressive Era revolution in American attitudes toward sex," *J. Amer. Hist.*, March 1973, *59.* 886.

[25] A. Nelken, "The venereal peril and public apathy," *New Orleans Med. & Surg. J.*, 1906-1907, *59:* 854.

"because the sanitary problems have been inextricably interwoven with vice and immorality. . . ." Despite its concession to private physicians, the medical boards of three large hospitals protested the Department's interference in medical matters.[26]

The increasing social awareness among physicians during the Progressive Era is clearly reflected in medical journals. A southern physician writing on the health needs of Blacks in 1903 reiterated the traditional beliefs as to their immorality and lack of mental ability, but he also suggested a state health insurance program for them which would require deducting five percent from their pay. The proposed insurance program would also provide for disability and old age pensions.[27] Several years later an article on the medical profession and its "Social Mission" drew attention to such social abuses as adulteration of food, poor housing, industrial diseases and accidents, and child labor. A medical journal in 1908, editorializing on "The Sanitary Wave," declared that the task of insuring public health increased with advancing civilization, and then went on to say that it was generally conceded that the "personal liberty of the individual is in such matters entirely subsidiary to the general welfare. . . ."[28]

A paper read by Dr. Clifford H. Irion before the Louisiana State Medical Society in 1908 explains in part the strong stand by physicians in favor of public health measures. Dr. Irion reminded his colleagues of the "indifference and antagonism of the public to the opinions and views of the medical man," and advocated support of public health as a means of combatting this attitude. When the profession is prepared to show "evidence of an unselfish desire on our part to bring about conditions tending to prolong human life and alleviate human misery," he declared, "the last vestige of opposition and antagonism will be swept away." The discussion which followed his remarks was even more revealing. One of the discussants pointed out that a salary of $1,000 per year would enable the health officer to give up private practice and devote himself entirely to public health work. This salary, he noted, was considerably more than many young physicians earned in their early years of practice.[29]

As with most of the moral crusades conducted by the medical profession, the fight for pure food and drugs, one of the AMA's most successful efforts, included a measure of self-interest. The rise of proprietary medicines in the 19th century posed almost as much of a threat to medical practice as that offered by irregular sects. Not surprisingly, the chief opposition to the AMA on this issue came from an unholy alliance of drug manufacturers and members of assorted healing sects. Sensing the growing prestige and political power of organized medicine, the irregular practitioners sought allies wherever they could find them.

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[26] Hermann M. Biggs, "Venereal diseases, the attitude of the Department of Health in relation thereto," *New York City Health Department Reprint Series*, no. 6, May 1913, pp. 5-7.

[27] C. M. Brady, "The Negro as a patient," *New Orleans Med. & Surg. J.*, 1903-1904, *56*· 437-40.

[28] *New Orleans Med & Surg. J.*, 1906-1907, *59*, 582; 1907-1908, *60*· 673.

[29] Clifford H. Irion, "The economic relation of the physician to the sanitary interests of the state," *New Orleans Med & Surg J*, 1908-1909, *61*· 128, 131.

A good many physicians shared the suspicion of big business which characterized the Progressive Era. An article in *JAMA* declared that opposition to pure food and drug laws arose "principally from the large dividend-paying, tariff-protected corporations. . . ." The opponents of drug laws countered by charging that the AMA itself was a trust attempting to dictate to physicians what drugs they should or should not prescribe.[30] Although the AMA membership generally backed the fight for a national pure food and drug act, echoes of the old issue of local and states' rights still survived. Dr. Charles Harrington in 1908 went to considerable lengths in *JAMA* to point out that the pure food and drug act was a regulation of interstate commerce and not a national health law. It was aimed at "commercial fraud" and was only incidentally related to health. In fact, he concluded, from the standpoint of health, such a law was not needed.[31]

While fighting for many causes, the major effort of organized medicine in the early years of the 20th century was aimed at strengthening and broadening the powers of local and state health boards and creating a national health department. An editorial in *JAMA* in 1903 listed the proper functions of a health board and included, in addition to the usual health measures, supervision over housing, health of school children, and the sanitary conditions of factories and stores. The editorial concluded that a public health department "should be a great aggressive organ of popular education regarding personal and public hygiene, and all that pertains to public health and physical well-being."[32] State medical societies consistently supported health measures. For example, in Kansas, a leader in health reform, the state medical society deserves considerable credit for the enactment of a whole series of sound health laws. In 1913 the *Journal of the Kansas State Medical Society* proudly listed some 21 public health measures for which the state could claim priority in the health field.[33]

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[30] G. K. E. Johnson, "National supervision and standardization of food," *J A.M A.*, Oct 27, 1906, *47* 1372; June 4, 1910, *54:* 1876-77.

[31] Charles Hamington, "States' rights and the national health," *J A.M.A.*, June 13, 1908, *50* 1953-59.

[32] *J A.M A* , May 30, 1903, *40.* 1511.

[33] James G. Burrow, *Organized Medicine in the Progressive Era. The Move toward Monopoly* (Baltimore Johns Hopkins University Press, 1977), p. 90

The problem of providing pure, wholesome milk for the poor dates at least as far back in America as the fight against swill milk (the watery milk from cows fed solely on brewery wastes) in the pre-Civil War years. The struggle was revived in the late 19th century as one of the Progressive Era's crusades. While the main battle was fought by newspapers, lay periodicals, and informed citizens such as Nathan Straus of New York City, medical societies also joined the struggle, and not infrequently supplied a good part of the leadership. In New Jersey, for example, Dr. Henry L. Coit persuaded the New Jersey State Medical Society to investigate the milk situation. The resulting investigation led the state legislature to establish the Essex County Medical Milk Commission, an agency designed to make and enforce regulations guaranteeing the quality of milk. Its success drew national attention, leading to the creation of similar local agencies and subsequently to the formation of a national association of milk commissions.[34]

School health was another area in which physicians and medical societies played a leading role. In New York City Dr. A. N. Bell, editor of *The Sanitarian,* began advocating school health inspection in the 1870s, and in the late 1880s the New York Academy of Medicine and the County Medical Society both evinced considerable interest in the subject.[35] By the early 1900s medical societies in most major cities, at least those with committees on public hygiene, usually could be counted upon to support school health programs, although many physicians had serious reservations about remedial work on the part of school nurses and medical inspectors.

By 1906 the AMA had emerged, largely under the leadership of Dr. Joseph N. McCormack, as a powerful national lobby with some 2,000 local representatives. While using its influence on many health fronts, it began to concentrate upon the establishment of a national health department. Congress, however, proved unreceptive until 1910 when Senator Robert L. Owen of Oklahoma introduced a bill to this effect. The AMA promptly swung into action, and its Council on Health and Public Instruction urged the approximately two thousand members of the Association's National Auxiliary Legislative Committee to pressure their representatives. The first bill, which proposed cabinet status for the health department, died in committee, but the following year, 1911, Owen introduced a second one omitting the provision for cabinet status. Despite strong support by the AMA and its

[34] Stuart Galishoff, *Safeguarding the Public Health: Newark, 1895-1918* (Westport, Conn . Greenwood Press, 1975), pp. 84-86; Manfred J. Waserman, "Henry L. Coit and the certified milk movement in the development of modern pediatrics," *Bull. Hist. Med* , 1972, *46* 359-90.

[35] Duffy, *History of Public Health in New York City, 1866-1966,* pp. 216-18.

constituent societies, the measure was defeated; in part by a lack of public interest. The National League for Medical Freedom, the voice of the patent drug manufacturers, argued that a federal health department would strengthen the AMA as a medical trust and deny Americans the right to seek their own medical care.[36] Although editorials in *JAMA* and other medical publications indignantly sought to refute this charge, they were unable to overcome the traditional public suspicion of the medical profession and fear of monopolies.[37]

Despite the failure to gain a national health department, the AMA's Council on Health and Public Instruction continued to promote health measures at all levels of government. In 1914 the Council's secretary listed the following among its minimum goals: sound laws covering medical licensure, vital statistics, and basic public health; local health agencies working in conjunction with state boards of health; effective regulations for water supplies and sewage disposal; and measures to promote industrial health, inspection of milk, and the health of school children.[38] While the membership of the AMA did not necessarily agree with all of these aims, the majority accepted them on principle.

As noted earlier, the AMA in the 19th century was led by an elite corps of physicians, many of them associated with medical schools and health boards, who were generally well-educated, successful practitioners, a situation which scarcely held true for the average poorly trained and underpaid physician. By the early 20th century the mushrooming of medical science had an immediate two-fold effect. It helped raise the prestige of the physician, but at the same time its success in the area of preventive medicine drastically reduced the number of patients. Moreover, as public health brought the former great epidemic diseases under control and turned its attention to tuberculosis, venereal disorders, and other complaints whose solutions involved an attack upon social conditions, the thin line between prevention and cure began to blur. The emergence of well-baby clinics, health centers, settlement houses, and other agencies designed to educate and provide for the well-being of the poor aroused the same fears among private physicians as had been true earlier of the dispensaries. The accusation was made repeatedly that these social agencies were depriving private medicine of paying patients.

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[36] Jonathan Dine Wirtschafter, "The genesis and impact of the medical lobby, 1898-1906," *J. Hist. Med. & Allied Sci*, 1958, *13:* 48-49; Burrow, *Organized Medicine in the Progressive Era*, pp 100-102, Manfred Waserman, "The quest for a national health department in the Progressive Era," *Bull. Hist. Med.*, 1975, *49:* 353-80.

[37] For example, see *J A.M.A.*, May 28, 1910, *54.* 1791-92; Oct. 14, 1911, *57* 1294-95.

[38] Burrow, *Organized Medicine in the Progressive Era*, pp. 88-89.

Even aside from the problem created by direct medical care for infants and mothers and other groups, the nature of preventive medicine is such that it requires universal applicability. Protecting the community by eliminating disease through the mass use of vaccines is infinitely better than using vaccines solely to protect individuals. Because of the wide variations in economic levels, public health officials logically favored mass immunization, particularly in the case of children. Whatever the merits of these proposals, they infringed upon private medicine, since immunizing children was a simple and lucrative source of income.

Hermann Biggs, a leading advocate of public health, was one of the first to recognize that broadening public health might bring it into conflict with the interests of private medicine. In 1897 he addressed the New York Academy of Medicine on the role of the medical profession and public health, and pointed out that relations between health boards and private practitioners could not always be cordial. The point of view of health departments and the profession "are widely separated," he declared, for health officials speak for the interests of the community whereas the physician speaks for the welfare of himself and his patient. A lack of communication caused by the failure of physicians to read health department circulars was responsible for much of the conflict, he explained.[39]

Dr. Biggs over-simplified the problem, possibly because of his association with the New York City Health Department, one of the better departments and one able to enforce its regulations. While New York solved the problem of reporting tuberculosis by 1900, the case was far different in other cities. An article in *McClure's Magazine* in 1905 asserted that physicians in St. Louis and Louisville openly flouted the law because they were not paid for reporting cases. The author cited city after city in which the local medical society had prevented the enactment of such laws or, where they existed, had simply disregarded them. The editor of *JAMA* responded to this criticism by stating that physicians were reluctant to attract public attention to the disease and, in addition, that reporting cases of tuberculosis would subject their patients to annoying interference and publicity.[40]

Dr. Haven Emerson, Health Commissioner for New York City, complained in 1916 that private physicians employed by the Department were doing a poor job compared to the Department's own doctors. Private physicians, he stated, had examined 26,300 foodhandlers and discovered only 7 cases of tuberculosis, 7 of syphilis, and no typhoid carriers, whereas the Department's physicians had examined 20,537 and found 20 with tuberculosis, 111 with syphilis, and 6 typhoid carriers. He also mentioned instances in which patients attending the Department's dispensaries had been treated by private physicians for "weak lungs" although the physicians had never examined their chests nor checked their sputum. After citing these and other abuses, he scathingly denounced the prevailing medical system which emphasized competition and money rather than the common welfare.[41]

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[39] Hermann M. Biggs, "Sanitary science, the medical profession, and the public," *Trans.*, NYAM, 1897, 199-201, 210-13.

[40] Samuel Hopkins Adams, "Tuberculosis: The real race suicide," *McClure's Magazine*, January 1905, no. 3, pp. 237, 239, 249; *J.A.M.A.*, Feb. 4, 1905, *44*· 392-93.

Dr. S. Josephine Baker recorded in her autobiography that a New England practitioner argued against establishing a Federal Children's Bureau on the grounds that saving all the mothers and children would eliminate the incentive for young men to study medicine. She added that after the successful establishment of baby health stations in New York City a petition signed by 30-some Brooklyn physicians protested that the Bureau of Child Hygiene was ruining medical practice.[42]

While the instances provided by Drs. Emerson and Baker may represent extremes, they do illustrate the growing clash between public health officials, fully aware of the high percentage of Americans who received little or no medical care, and private practitioners occupied with or attempting to achieve a reasonably profitable practice. In general, however, the objections of physicians to public health were aimed at those measures or agencies which provided direct medical care. For example, the New York Academy of Medicine resolved in May 1913 that it opposed the Health Department's proposal to establish a clinic or hospital for the treatment of venereal diseases, although it favored having the Department provide free diagnosis for those unable to pay. Two years later, in commending the Bureau of Child Hygiene for closing five special nose and throat clinics for school children, the NYAM's Public Health Committee declared that "the functions of the Department of Health should be restricted to the prevention of disease and that no therapeutic activities should be undertaken."[43]

As World War I approached, the medical profession was steadily improving its position in society, but it was still beset by internal problems and by what it perceived as economic threats arising from changing social and economic conditions. Although long opposed by the AMA, the contract practice still flourished in industries such as mining, lumbering, and railroads, and in major cities under the auspices of social and fraternal groups. An equally grave threat was seen in the rapid growth of workmen's compensation laws. Largely as a result of its lack of interest in the heavy toll of sickness, injury, and death arising from industrial conditions, the medical profession had had little voice in shaping these laws. By 1914 practitioners became aware that insurance companies and industries were hiring their own physicians, clearly a threat to private practice, and that the new compensation laws had created third-party intermediaries such as the government and insurance companies between physicians and patients. Even in those cases where insurance companies employed private physicians, it was the company rather than the physician that set the fee schedules. Thus, precisely at a time when medicine was beginning to achieve a measure of professional status, the physicians' improved economic status and independence was threatened by these new developments.[44]

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[41] Haven Emerson, "Will the private practitioner determine the future of public health work?" *New York City Health Department Reprint Series*, no. 48, July 1916, pp. 10-12; Emerson, "Preparedness for health," *ibid.*, Jan. 1917, no. 51, pp. 15, 18-19.

[42] S. Josephine Baker, *Fighting for Life* (New York: Macmillan, 1939), pp. 138-39.

[43] Minutes of the NYAM, May 1, 1913, p. 429; NYAM, Summary of the activities of the Public Health Committee . . . 1915, p. 10.

Even worse, the abuses and inadequacies in medical care which came to light in the course of the fight for workmen's compensation laws led reformers in the direction of national health insurance. The story of the unsuccessful fight for compulsory health insurance at both state and national levels has been well told.[45] Led by a small group of active members, the AMA at first gave tentative support to health insurance. Its Judicial Council reported in 1913 that the inadequate income of most United States' males made some form of medical insurance a necessity. Subsequently its Committee on Social Insurance reported favorably on the British system of health insurance and asserted that a compulsory system was infinitely better than a voluntary one. In 1916 *JAMA* published articles favoring health insurance and gave editorial support to the principle.

Within a year the movement had peaked, and organized medicine sharply reversed its position. Among the many explanations for the failure of health insurance are America's preoccupation with the war, the decline of Progressivism, the opposition of insurance companies and other vested interests, and the charge that its proponents conducted the campaign on too intellectual a level. Another important factor which has not received adequate attention was the declining influence of the old guard of social-conscious physicians such as Alexander Lambden, Hermann Biggs, and Sigismund S. Goldwater. The reorganization of the AMA at the turn of the century had made the Association far more responsive to state medical societies and thereby enhanced the influence of the general practitioners. Moreover, the institutionalization of public health had widened the separation between public health physicians and those engaged in private practice. Public health tended to attract many of the more social-conscious individuals, a group which had leavened the profession in the past. In addition, the better-educated and more intelligent young physicians were attracted increasingly into specialties and academic medicine. The result of all of these changes was that as the AMA began to reflect the views of the general practitioner, it tended to become more of a guild or union dedicated to improving the economic position of its members.

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[44] For the best account of these developments, see Burrow, *Organized Medicine in the Progressive Era*, pp. 119-38

[45] Ronald L. Numbers, *Almost Persuaded: American Physicians and Compulsory Health Insurance, 1912-1920* (Baltimore: Johns Hopkins University Press, 1978; Henry E. Sigerist Supplements to the *Bull. Hist. Med.*, n.s., 1). For an account of the struggle in one state, see Arthur Viseltear, "Compulsory health insurance in California, 1915-1918," *J. Hist. Med & Allied Sci.*, 1969, *24* 151-82.

By 1917 *JAMA* still carried reasoned arguments favoring health insurance, but it contained an even greater number of shrill denunciations of socialism and bolshevism. A New Jersey physician argued that compulsory health insurance was "pure socialism" which would reduce the rank and file "of a learned respected profession to a level of wage earners." A New York practitioner insisted that only a small part of the population was without medical care and that the proposed bill was un-American since it would destroy individualism.[46] Vitriolic opposition characterized state and local journals, too. An article in a New York medical journal denounced a proposed state medical insurance bill as socialism which would benefit the laborer "but would sweep away the meagre earnings now enjoyed by the half-paid Aesculapian."[47] Even more revealing, the same author declared that health insurance was the road to bolshevism, adding bitterly: "Thus it is that we have the amazing spectacle of our Rockefellers and our Lamberts and our Goldwaters striving with the infatuation of the veriest soap box orator to advance the standard of red flag internationalism."[48]

While the fight for national health insurance applies only to the broadest interpretation of public health, many of its proponents were leading public health figures, an association which was readily perceived by many AMA members. More important, this issue clearly marked a turning point in the

[46] *J A.M.A* , April 14, 1917, *68:* 1140-41; May 19, 1917, *58·* 1500-01.

[47] W. P. Cunningham, "Health insurance," *New York Med. J.*, 1917, *106:* 683.

[48] W. P. Cunningham, "A Bolschevik bolus," *ibid.*, 1918, *108:* 1061-62.

attitude of the medical profession towards public health. Whereas formerly the majority of physicians had supported the principle of public health and most of the specific measures designed to implement it, by 1919 all forms of health regulation were coming under suspicion. The physician who proclaimed in that year that the laws regulating drugs, venereal diseases, and so forth were suppressing "Americanism" and making the physician "little more than a stool pigeon, a clerk for the health boards," may not have been typical, but he represented a large number of his colleagues.[49]

The 1920s witnessed a political reaction following the Progressive Period and World War I, and little new in the way of health legislation was proposed. The one innovation was the Sheppard-Towner Act of 1921 which authorized federal grants-in-aid to states to promote the health of mothers and children. The AMA and most of its affiliated societies strongly opposed the measure, asserting that it threatened the American home, invaded states' rights, and was completely unnecessary.[50] *JAMA* stressed in its editorials (a) that no emergency existed, and (b) that in any event the welfare of mothers and children was a concern of the state and local authorities, not the federal government. Its correspondents expressed even stronger opinions. One asserted that it was sheer nonsense to assume that social and economic matters, *i.e.*, food and care, were more important in pregnancy than medical ones. Another called it a sociological experiment to be conducted by nonmedical persons.[51] An editorial in a state medical journal declared that the bill had found its way into the legislature "under the guise of humanity," but that it was essentially "paternalistic and socialistic in nature. . . ."[52]

Although unsuccessful in stopping passage of the Sheppard-Towner Act, organized medicine steadily lobbied against it and managed to prevent its reenactment in 1929. Maternal and child care necessarily involved some measure of curative medicine, and the profession was determined to prevent any infringement upon private practice. Henceforth the AMA followed a policy of intransigent opposition to all health programs which provided any form of direct medical care.

As the American standard of living rose, accompanied by a higher level of general health, the distinction between preventive and curative medicine, particularly in the case of infants and school children, became even more difficult to make. To solve this problem, organized medicine narrowly defined public health, placing emphasis on such aspects as pure water, food, and drug regulations and health research and education. The AMA's view of public health was particularly significant because of its considerable political power. Government health agencies are dependent upon legislative bodies, pressure groups, and ultimately the public for their funding; hence public health, like politics, is the art of the practical. To advocate strongly a health program which may fail of public support is to jeopardize funds for public health in general. As the 20th century advanced, public health leaders found it expedient to consult with organized medicine before promoting any major program and to modify health measures in accordance with the physicians' interests.

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[49] Louis G. Stirling, "Tendencies of the times, medical and otherwise," *New Orleans Med. & Surg. J*, 1920, *72*: 217-20

[50] Rosemary Stevens, *American Medicine and the Public Interest* (New Haven & London Yale University Press, 1971), p. 143.

[51] *J.A.M.A.*, Feb. 5, 1921, *76*. 383; April 30, 1921, *76:* 1264-65; May 7, 1921, *76:* 1319

[52] *New Orleans Med. & Surg. J.*, 1922-23, *75* 89-90.

This dependence on the public and the fear of offending any significant part of it has characterized the APHA since its inception. When Billings opposed the APHA taking a stand on venereal disease in 1882, he was apprehensive that a radical position on the issue would bring opprobrium on the Association. Although the New York City Health Department had an excellent public image and was strongly supported by many of the city's leading physicians, it moved very gingerly in requiring the compulsory reporting of contagious disorders. In most other cities health departments made no effort to enforce those regulations which encountered opposition from local physicians. It was obvious that uncovering diseases and physical defects among school children was meaningless without therapy, yet health department clinics for this purpose seldom survived long over the objections of local medical societies. Proposals for health centers and health districts both in major cities and rural areas encountered sharp opposition from the medical profession, a fact which Hermann Biggs discovered when he proposed such a program as New York State Commissioner of Health in 1920.[53]

The net effect of the AMA's policy was to make public health officers cautious to the point of timidity. They disassociated themselves from major reforms and concentrated upon non-controversial aspects of public health work. The Great Depression did bring some improvement in the policies and personnel. Private practitioners suffered with the rest of the country, and the declining number of paying patients pushed many young physicians into public health. The intelligent and idealistic among them supplied a good number of first-rate public health leaders in the ensuing 30 years. In addition, the social climate during the 1930s was conducive to change. But as private

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[53] Winslow, *The Life of Hermann M. Biggs*, pp. 346-47.

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medicine recovered from the vicissitudes of the economic crisis, the AMA and its constituent societies once more effectively used their political power to prevent encroachments upon private medical practice.

The post-World War II years have seen a sharp increase in what Erwin Ackerknecht calls the non-practicing physicians, *i.e.*, doctors working in public health, research, academic medicine, and so forth. As salaried employees these individuals tend to be less concerned with the sanctity of the fee system and more likely to consider alternatives to private medicine. In addition to non-practicing physicians, the rise of group practice in many forms, ranging from private clinics to health maintenance organizations, has steadily diminished the role of the individual practitioner. These changes in the practice of medicine have been accompanied in the 1960s and 1970s by a rising social consciousness which has led to public acceptance of health care as a right.

Individualism is basic to the American social and political system, and the AMA is on solid ground in fighting to preserve as much individual freedom as possible. Yet the family practitioner working on his own began to decline well over 50 years ago with the blossoming of specialists and private clinics. The role of government, too, in these years has been expanding steadily, and the assumption of health care as a right provides a further impetus to government action. Under these circumstances, the gap between public health physicians and private practitioners has already narrowed. One explanation for this is that the younger generation of physicians is both more willing to accept social change and more aware of the political implications of health care as a right. The hope for the future is that organized medicine will accept political realities and work with political leaders to insure that we can achieve public health in its broadest sense while at the same time preserving as much individual freedom as possible.

*THE FIELDING H. GARRISON LECTURE**

AN AMERICAN CLERICAL CRISIS: MINISTERS' SORE THROAT 1830-1860

JAMES H. CASSEDY

This paper will deal with one of the unsung diseases of mankind. I have selected a malady that has never taken its thousands of lives, has never terrified cities into quarantines or cleanup campaigns, has never galvanized science into heroic research effort, and, so far as I am aware, has never produced so much as a ripple on the ocean of contemporary historiography. In our modern world, the condition is considered to be a relatively simple medical problem, one that is usually amenable to treatment. During the middle decades of the past century, however, it was not so readily handled, and its incidence was the occasion of much anxiety and even hardship. For some twenty or thirty years, it was, in fact, a significant occupational disease of a prominent group of individuals. As such, it had broad medical, professional, and social ramifications in the pre-Civil War United States.

This ailment typically started out as a tickle in the patient's throat, one which sometimes persisted for months as a very minor annoyance, of "something in the throat to be swallowed or hawked up, an increasing secretion of mucus," accompanied by fatigue from extended speaking and some loss of power in the voice. In time, if the condition was neglected, as it often was, the symptoms became more severe: the voice became rough and hoarse, the throat was constantly sore and tender, and it became increasingly painful to swallow and difficult to speak. Ultimately, in the extreme cases, a virtually complete loss of voice set in, a condition that sometimes proved to be a permanent one in those years before effective remedies had been developed.

The condition was long undifferentiated from other diseases of the throat and larynx, such as bronchitis, chronic laryngitis, or trachitis. Gradually, however, its special nature became apparent, and eventually it was described and labelled as a discrete pathological condition. In 1847 Horace Green gave it the name of follicular inflammation of the throat and air passages, not much different from the present nomenclature, follicular pharyngitis or glandular pharyngitis. For the ordinary ante-bellum American, however, it was known far more graphically, and perhaps affectionately, as "Minister's Ail," or "Clergyman's Sore Throat." Scholars of the day also worked out some appropriate Latin versions. Of these, I particularly like Dysphonia Clericorum, or the longer, Morbus Laryngeus Concionatorum, usually translated as Laryngeal Affection of Public Speakers.[1]

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* Presented at the 51st annual meeting of the American Association for the History of Medicine, Kansas City, Mo., May 11, 1978.

Clergyman's Sore-Throat clearly did not conjure up the same terror that yellow fever or cholera inspired during the 1830s, 40s, and 50s. In terms of prevalence, moreover, it was no rival to such common endemic diseases as consumption, syphilis, or malaria. Yet, for a time it appeared to be at least a potential threat to the conduct of an entire way of life, one in which the use of the voice was an essential part.

It is worthwhile speculating for a moment what the mid-nineteenth century would have been like if any significant proportion of its leaders and spokesmen had been incapacitated by loss of voice at any given time. Our late twentieth-century armamentarium of microphones, loud-speakers, and other devices affords electronic support to the feeblest voices, and our pharmacies supply a vast array of antibiotics and other drugs for relief of the sorest throat. The nineteenth century, however, had to get by without these artificial aids and with lesser therapies. Epidemic sore throat among the nation's spokesmen at that time would certainly have cramped their style; it might well also have badly disrupted the normal processes of communicating ideas. Imagine the ante-bellum political scene of the United States without the oratory of its Websters, Calhouns, and Bentons. Imagine the abolitionist cause bereft of the vocal argumentation of its Wendell Phillipses and Charles Sumners. Picture the smallest community without its battery of earnest and tireless Lyceum speakers. And try to envision the great religious movements of the century without the powerful voices of their Finneys and Beechers.

To all of these, add the mid-nineteenth-century physician, who was himself often called upon to speak in public and could appreciate the fine points of oratory.[2] Lloyd Stevenson has perceptively delineated the central role of oratory in the flamboyant career of Charles Caldwell.[3] But Caldwell was only one among many doctors. The whole generation from Benjamin Rush through Daniel Drake included a host of physicians whose gifted voices contributed almost as much to the shaping and sustaining of American medicine as did their intellects and pens. Many a medical school undoubtedly depended for its very existence more on the oratorical effectiveness of its professors than on the scientific content of the professors' lectures. The mid-nineteenth-century medical banquet circuit, moreover, might well have been a disaster had the Autocrat, Oliver Wendell Holmes, and his peers, lost their voices.

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[1] F. H. Hamilton, "Morbus laryngeus concionatorum, or laryngeal affection of public speakers," *Boston Med. & Surg. J.*, 1840, *23*: 41; Horace Green, *A Treatise on Diseases of the Air Passages* (New York and London: Wiley & Putnam, 1846)

[2] Austin Flint, an impressive speaker himself, took deep interest in the lecturing effectiveness of the great Paris clinicians he heard in France in 1855 and, writing home, he assured American medical readers that "the French language is much less adapted to oratory and rhetorical power than our own." Flint, letter to the editor, *Buffalo Med. J.*, 1855, *10* 132-133.

The physicians of the 1830s, 40s, and 50s were well aware that forceful, unimpeded speech was crucial to the conduct of both the general and medical affairs of their day. In fact, their contemporaries seem to have gone overboard in the matter. Never, it appeared, were so many public people doing so much talking. The surgeon Frank Hastings Hamilton described the phenomenon as he saw it in 1840:

> All seem to have been seized, lately, with a *cacoëthes loquendi.* A barrister can hardly do justice to his client without an argument of four hours; and a legislator cannot relieve his mind, or satisfy the just expectations of his constituents, with a speech of less than six or eight hours. The whole people are becoming teachers or preachers. We have lectures upon phrenology, animal magnetism, Grahamism, Thomsonism, temperance, abolition, colonization, storms and weather, tight lacing, boxing, fencing, etc., etc.—on all the doctrines of religion and morality, and all the claims of humanity—lectures upon law, medicine and the arts, at our colleges and associations—with speeches innumerable at political caucuses and conventions; the whole uttered with . . . a vast expenditure of wind.

In fact, given such strenuous demands upon American voices, there was probably little surprise among the medical profession when a significant segment of the nation's leadership began to be affected by laryngeal affections. The only wonder was, as Hamilton concluded, that the "delicate organs" of these speakers, "or anything else but chiselled iron" could have endured for so long without earlier trouble.[4]

Clergyman's sore throat was at first thought to be a peculiarly American disease. By the mid-1840s, however, it had been recognized and was being written about by British and continental authors as well. Contrary to its popular name, it was never confined to members of the clergy, but was soon identified among lawyers, teachers, and individuals in other occupations. Nevertheless, it was originally noticed most prominently in the ranks of the American Protestant clergy and remained especially conspicuous among this occupational group.[5] By far the greatest concern of the medical profession, in any case, was the presence of the condition among the ministers. Physicians of the day seem to have concluded that, despite its relative mildness, a malady like pharyngitis, which could prevent clergymen from performing their essential functions in society, i.e. from preaching, demanded their best professional attention. Accordingly, they set about, with far greater togetherness than they usually demonstrated, to try to cope with the ailment.

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[3] Lloyd G. Stevenson, "Charles Caldwell: the hero as orator," in *Autobiography of Charles Caldwell, M.D.* (New York: Da Capo, 1968), pp. v-xxvi.

[4] Hamilton, "Morbus laryngeus concionatorum," *loc. cit.* (n. 1 above), pp. 46-47.

In order to appreciate just what that unusual degree of agreement meant, it is necessary to digress once more in order to look at the general state of clerical-medical relations. Briefly stated, throughout the span of the sore-throat crisis, overall rapport between the two professions was anything but good. In England, well before the famous Huxley-Wilberforce exchange of 1860 at Oxford, medicine and the clergy were admittedly in an open state of war, and in the United States a comparable breach progressively embittered the two professions.[6]

By the 1830s and 40s, members of the two groups had accumulated a variety of grievances against each other. To not a few clergymen, orthodox physicians in that age of hygienic reform were giving their patients—their common constituency—too many drugs and bleeding them too much. To others, the doctors were quarrelsome and dogmatic, hardly as informed about modern medical matters as the ministers themselves were. Physicians also often appeared as arch representatives of materialism, as threats to the very foundation of religious faith. More immediately, they frequently seemed to be deliberately erecting barriers to keep clergymen from free access to the sick members of their flocks.

Physicians' complaints about the clergy were rather more complex. Partly they grew out of the emergence of new and competing medical systems, between which ministers, like other users, were finding themselves obliged to make choices. In addition, many nineteenth-century clergymen still clung tenaciously to the old notion that they were to some extent physical as well as spiritual healers, or at least that they had a responsibility for advising their flocks on the choice of medicines and doctors. As one manifestation of this lingering tradition in the nineteenth century, when clergymen obtained relief from one or another of the available remedies, they insisted on sharing the good news. Just as with their spiritual experiences, they seemed to feel it a "duty . . . to humanity" to make public their medical experiences, unaware that single events of that kind were not sufficient authority for recommending remedies to others. As a consequence, the mounting floods of patent medicine advertisements increasingly carried the laudatory certificates of this or that divine. Such endorsements were naturally greatly prized by the manufacturers and a source of immense irritation, throughout the century, to organized medicine.[7]

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[5] Green, *Diseases of Air Passages*, pp. 45-47; "Throat diseases," *Boston Med. Surg. J.*, 1852/53, *47:* 260.

[6] "Quack advertisements in religious newspapers," *N Amer. Med Chirurg. Rev.*, 1858, *2.* 182; "Divinity vs. physic," *Buffalo Med J.*, 1853/54, *9:* 746-751.

Annoying as these endorsements were, regular physicians could perhaps have put up with them if it had simply been a matter of scientifically naive ministers being taken advantage of by unscrupulous quacks. However, certain of these same preachers, encouraged by Jacksonian anti-monopolism and reform sentiment, were asserting the right to play far more active medical roles. In this climate, not a few were readily seduced by one or another of the new therapeutic sects. The more aggressive did not hesitate to carry their enthusiasms to the actual bedside of the sick. There they freely countermanded the directions of the regular physician, suggested that a sectarian practitioner be brought in, or themselves urged some special regimen or other upon the patient.[8] Clergymen also increasingly found occasion to deal with illness and hygiene in their sermons, in the course of which they felt free to recommend one or another of the sects or even some one practitioner. Concurrently, religious journals frequently carried medically offensive nostrum advertising, while their editors found it timely to publish articles on the virtues of homeopathy or the water cure.[9] In Boston, physicians were further irked by the 1849 petition of eight or ten clergymen on behalf of the projected institute for female medical education. In almost every state, the medical profession was angered by the spectacle of ministers swarming "as gratuitous inmates, or . . . charity patients, in every water-cure hotel in the land," and then filling the pages of the religious periodicals with their testimonials.[10]

Provoked though they were, ante-bellum regular physicians were in no position to strike back very effectively at the offending clergymen. Some medical societies and editors did talk darkly about discontinuing the traditional provision of gratuitous medical treatment for needy preachers and their families. But such a move would only have offended the entire clerical profession and driven more of its members away from orthodox medicine. After all, the offenders appeared to be only a relatively small minority of the clergy; most, it seemed on reflection, were "considerate and consistent supporters" of the regular profession.[11]

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[7] McG, editorial, "Why clergymen should not recommend quack medicines," *Detroit Rev Med. Pharm* , 1868, *3.* 49; D [i.e. Daniel Drake], "Clerical encouragement of quackery," *Western J. Med. & Surg.*, 1841, *4:* 235-236.

[8] O. C. Gibbs, "Clerical quackery," *Buffalo Med. J.*, 1859/60, *15* 418-420

[9] A small community in upstate New York was reported in 1839 to have no less than "five Ministers of the Gospel that preach Thomsonianism out of the pulpit." *Bot. Med. Recorder*, 1839/40, *8:* 31.

[10] "Clerical encouragement of empiricism," *Boston Med & Surg. J.*, 1849, *41·* 10; "Divinity vs. physic," *Buffalo Med J.*, 1853/54, *9:* 748.

At the same time, physicians of *all* therapeutic persuasions continued during this period to be fundamentally religious individuals, and often faithful churchgoers. Only rarely were they overt unbelievers, and, despite the controversy, most retained a good deal of respect for clergymen, at least for those who associated themselves with the "right" medical position. Most physicians came to recognize, furthermore, that it was in their own self-interest to protect the health of these community spokesmen who were so influential in the common man's choice of medical treatment. Not only the medical regulars, then, but every ambitious therapeutic sectarian, had a crucial stake, both in keeping clergymen loyal to them and in ridding the sympathetic ones of their sore throats.

At this point we are obliged to ask the question of just how serious the sore throat actually was, just how much of a threat it really posed to the pre-Civil War clerical profession. Some of the evidence is decidedly negative. Physicians themselves early abandoned the theory that extended public speaking in and of itself brought on diseased throats, since the highly vocal legal profession remained relatively unaffected. The great age of revivalistic oratory, moreover, seems to have swept on across the country unhindered by the complaint. With but a single exception, the biographies of the nineteenth-century preachers that I have looked into are silent about crises brought on by failures of speech. And no historian of religion could recall for me any examples of pastoral careers shattered by loss of voice.

The outpouring of contemporary literature on the subject, however, persuades us that this was no phantom disease. In New York City alone, Horace Green could point to some two dozen clergymen whom he had personally treated for this ailment before 1847.[12] While few if any besides Green prepared books at that time on throat diseases, a great many other Americans discussed the subject in periodical articles. Outwardly, in fact, physicians seemed to be more interested in the minister's sore throat than the members of the clergy themselves were. At least, if the learned journals I have sampled are at all representative, the medical press of the period gave far more attention to it than did the ecclesiastical press. Editors and writers in religious journals naturally lamented any such losses to their churches of vigorous and effective preachers, but some tended to dismiss the problem with more than a touch of fatalism. Since the losses were obviously the will of God, they reasoned, "let us look to HIM to supply their place."[13]

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[11] "On the propriety of exacting remuneration for medical services from clergymen," *Annalist*, 1847/48, *2*. 453-454, 468-472; "Fees from clergymen," *Ohio Med & Surg. J.*, 1848/49, *1*: 189.

[12] Green, *Diseases of Air Passages*, passim.

Americans had always had their share of ordinary sore throat, along with "putrid sore throat," diphtheria, and other highly serious "throat distempers." Up to around 1830, the common sore throat was known as a mild affliction which did not seem to bother people greatly. In 1831, however, a newly potent variety came to notice in New England. By the end of that year, large numbers of clergymen in almost every section of that region were reported to be "seriously affected," and some, in the prime of life, were being left "wholly incapacitated for public speaking." In the next few years, the malady became endemic through most parts of the North and remained so at least up to the Civil War. In the Southern states, up to 1840, observers considered the disease to be "of very limited extent." Over the next two decades, however, that region seemed to become about as infected by the complaint as the other sections.[14]

Since individuals did not ordinarily succumb to this particular form of throat disease, at least not directly, the name was seldom if ever to be found on the bills of mortality. Its quantitative extent was therefore a matter of conjecture. Clerical spokesmen could readily think of cases of clergymen they had personally known who had been struck down by the malady, but they had no specific numbers. Medical men were reduced to referring vaguely to the "scores" or "multitudes of divines" who were afflicted by it, or to the "very many" who reportedly had to "ask dismissal" from their churches because of it. Nobody really knew for sure, moreover, whether some denominations were worse hit than others. In the beginning, reasons were suggested why Catholic, Methodist, and Baptist clergymen might be immune. However, ultimately the disease was found among them just as it was among the Congregationalists, Presbyterians, and Episcopalians.[15]

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[13] "Mortality of Ministers," *Christian Advocate,* Nov. 25, 1831.

[14] Hamilton, "Morbus laryngeus concionatorum," *loc. cit.* (n. 1 above), pp. 41-42; A P. Merrill, "An essay on sore throat, or chronic pharyngitis," *New Orleans Med. & Surg. J* , 1853, *9:* 148-152 At the time of his death in 1852, Daniel Drake believed that the disease was increasing in the central and western regions of the United States. See his, *A Systematic Treatise, Historical, Etiological and Practical, on the Principal Diseases of the Interior Valley of North America,* Series 2 (Philadelphia: Lippincott, Grambo, 1854), p 806.

Prior to 1832, the principal types of disorders usually associated with the "literary life" in the United States were digestive troubles, apoplexy and other brain disorders, consumption and other respiratory ailments, and liver trouble. The last ailment seemed to be particularly prevalent among the clergy, where it was thought to be the cause of much melancholy and depression. George Hayward, "Lecture on some of the diseases of a literary life," in his *Surgical Reports and Miscellaneous Papers on Medical Subjects* (Boston Phillips, Sampson, 1855), pp. 390-400.

A number of attempts were made to obtain specific information. Editors asked their readers for data which might reveal the extent and geographical distribution of the disease, while medical societies circulated questionnaires on the subject. In the Mid-West, several communities organized essay contests on the theme of the "Importance of Good Health in Ministers of the Gospel." However, none of these ventures appear to have produced any significant findings.[16]

Benjamin M'Cready noted in 1836 that clergymen had always been the longest-lived among American professional men, with an average longevity of 65.7. He also knew that in his day ministers were being exposed to an increasingly large variety of illnesses, accidents, and debilitating conditions. M'Cready pointed out that clergyman's sore throat was often brought on or accompanied by an overall deterioration of the preacher's physical condition, and subsequent medical observers habitually came to regard the condition in the individual as an accompaniment of complete physical breakdown.[17] For most, it became symptomatic of a widespread general decline in the state of health of the clerical profession. The search for causes of the sore throat was thus, to a considerable extent, an investigation of the larger question, of why this segment of the nation's leaders should have been suffering so much overall bad health at this particular point in history.

Not much solid information was to be had as to the possible causes of the sore throat, but there were surmises aplenty, some of which contained seeds of truth. By far the most frequently suggested etiological hypotheses focussed on environmental or occupational conditions and on gross violations of the laws of personal hygiene.[18] Certain individuals thought that ante-bellum clergymen had really brought the sore throat on themselves because, unlike lawyers and other public speakers, the former had in recent decades become conspicuously clean-shaven. Hair at that time was considered a "bad conductor of caloric," and as such it helped retain body heat. Ministers were accordingly advised to emulate the habits of their forefathers and go back to their beards.[19]

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[15] Hamilton, "Morbus laryngeus concionatorum," *loc cit.* (n. 1 above), p 41; "Impaired voice, in clergymen," *Boston Med & Surg J* , 1839, *20* 112, Senex, "Loss of voice and health in clergymen," *ibid* , p 249.

[16] Impaired voice, in clergymen," *loc. cit.*, 112-113, Luke Howe, "The minister's ail," *ibid* , pp. 347-348; D [Daniel Drake], "Throat disease of public speakers," *Western J Med & Surg* , 1843, *7*· 66-68; "The health of the clergy," *ibid* , n.s., 1844, *2.* 371; *ibid.*, n.s., 1845, *3.* 184.

[17] Benjamin M'Cready, "On the influence of trades, professions, and occupations, in the United States, in the production of diseases—being the prize dissertation for 1837," *Trans., Med. Soc State of New York,* 1836/37, *3:* 128-132. M'Cready's sample of physicians had an average longevity of 62.8 years Similarly, Amariah Brigham characterized most American clergymen as "very unhealthy, a great many suffer from inflammation about the throat." See his *Observations on the Influence of Religion upon the Health and Physical Welfare of Mankind* (Boston: Marsh, Capen & Lyon, 1835), p. 143.

Another school of thought cast the blame on the minister's clothing, specifically his cravat or neck-handkerchief. The typical clergyman of the period wore a stiff high cravat, thickly folded. This, critics found, "irritated and embarrassed the larynx" in the course of speaking, impeded the free return of blood from the head, and kept the neck so hot and moist as to leave the larynx muscles feeble and flabby. Since the cravat was only an item of fashion anyway, discarding it was seen enhancing the health of clergymen almost to the extent that giving up the corset was supposed to benefit women.[20]

George M. Beard was convinced that Americans' proneness to pharyngitis was related to their inordinate consumption of hot coffee and tea, a habit which left the mucous membrane of the throat weakened and soft. Others laid it to chronic indigestion, brought on partly by tensions but also by irregular, excessively large, or poorly-cooked meals. Methodist circuit-riders were thought to be more exposed to this latter health hazard than most clergymen. As one of them wryly observed, this was because they "live probably full half their time at the houses of their members and friends." Out of respect for the preacher, the hosts almost invariably, it seemed, "prepare for the occasion (what the good people ignorantly suppose) 'the best diet'; and the ministers, in such cases, must either eat highly indigestible food or none."[21]

A somewhat analogous situation, in the cities and towns, was the rise of a certain "class of fashionable ministers," whose time was said to be so exclusively taken up by their female parishioners as to leave them bereft of "all vigor and virility," vulnerable both to illness and the contempt of males. Still, quite apart from the question of their virility, there was no doubt that most urban clergymen in the 1830s and 40s were fast becoming sedentary. Parishioners complained that their ministers increasingly slept late in the morning and then spent much of the rest of the day in their studies or libraries. Since few of them had farms any more they got little outdoor exercise. Many no longer even got the benefit of walking or riding on horseback to their pastoral calls, but insisted on riding in the greater comfort and dignity of their carriages, to the disgust of their critics.[22]

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[18] Hamilton, "Morbus laryngeus concionatorum," *loc cit.* (n. 1 above), pp 43-46; Green, *Diseases of Air Passages*, pp 46, 165-166.

[19] "The growth of the beard medically considered," *Water-Cure J* , 1846, *2* 187-188, "Shaving the beard," *Boston Med. & Surg. J.*, 1854, *50*. 9-10; "The beard movement," *ibid* , p 166; George M Beard, commentary in his translation of Adelbert Tobold, *Chronic Diseases of the Larynx* (New York: Wood, 1868), p. 101.

[20] Hamilton, "Morbus laryngeus concionatorum," *loc cit.* (n. 1 above), p 45.

[21] Beard, *op. cit.* (n. 19 above), pp 94-95, Thos L North, "Causes of the premature death of Methodist ministers," *Water-Cure J.*, 1852, *14*. 49. North, a Wisconsin Methodist, had never known more than one or two American ministers who appeared to him to be healthy The rest, he found, were affected by "bronchitis, bilious disarrangements, or incipient consumption."

Probably none of these problems of the clergyman, however, were as serious as that of overwork. The duties of preachers had increased immensely since 1800. The so-called Second Great Awakening had proved to be a great success in stirring up religious enthusiasm, a zeal that had been translated not only into special revivals and camp meetings but into a profusion of regular prayer meetings and those of associated religious societies and benevolent organizations. Amariah Brigham, Superintendent of the Hartford Retreat, marvelled in 1835 at the numbers and variety of these bodies: Bible, tract, and missionary groups; temperance and abolition societies; others for the benefit of aged seamen, Greek patriots, and the poor generally. Churches which formerly were used only on Sundays now had activities several evenings during the week as well.[23]

The ministers not only had to organize and direct these manifold activities but found themselves forced to deliver something over four times as many sermons and addresses as previous generations of clergymen had. A young New England Methodist minister, writing in his journal for 1832, summarized a schedule that was probably not exceptional of that hyper-active and perfectionist generation of preachers. In a single year, he recalled, he had travelled 3,341 miles and made 972 pastoral visits; he had "read 9,227 pages in useful books [and] 2,838 chapters in the book of God;" he had participated in three camp meetings and 185 prayer meetings or comparable gatherings; and on top of everything he had prepared and preached 208 sermons.[24]

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[22] "Divinity vs. physic," *Buffalo Med. J.*, 1853/54, *9:* 746-751; "Diseases of clergymen," *Boston Med. & Surg. J*, 1844, *30:* 463-464; *ibid*, 1852, *47.* 260; North, "Causes of the premature death of Methodist ministers," *loc. cit.* (n. 21 above), p. 49.

[23] Brigham, *Influence of Religion upon Health*, pp. 142-144, 171; Senex, "Loss of voice and health in clergymen," *loc. cit.* (n. 15 above), p 249-250; Hamilton, "Morbus laryngeus concionatorum," *loc. cit.* (n. 1 above), p. 44.

[24] *Christian Advocate*, Sept. 19, 1834. Observers recalled that New England churches in earlier generations had frequently had two ministers to share in the labors that by the 1830s had fallen to single individuals.

Such exertions were understandably hard on bodies, nerves, and voices. Merely the pressure of having to prepare so many original sermons, week in and week out, was deadly. Ministers tried various ways of lightening their labors, including repeating sermons and cutting down on visits to parishioners, but such expedients merely brought down on them the criticism of their flocks and had to be abandoned. Contemporaries who knew what was physically involved were thus not surprised when these men, with scant exercise or relaxation, were perpetually tired, had chronic indigestion, and sometimes collapsed from accumulated conditions. I have not determined whether any preachers actually ended up in asylums as a result of their exertions, but sizeable numbers certainly wrecked voices and health in the perpetual strain of keeping the revivals going. Protestants expressed some envy of the Catholic church, which typically avoided much of this strain by providing larger numbers of clergymen for comparable tasks, but few of the former managed to get relief during this period. As one editor of a Protestant journal observed: "If the churches continue to exact of their ministers so much 'protracted' exercise of lungs, they may kill them faster than the Education Society can raise up new ones."[25]

The conduct of these many activities was obviously a matter of constant worry for the clergyman. In fact, certain perceptive souls were persuaded that many if not most of the ministers' ills, even the sore throat, were rooted in nonphysical causes, and specifically in a galaxy of anxieties that increasingly burdened their lives. Preachers must have had far more than their share of "hangups"—professional, social, sexual. To be sure, it was not always possible to tell when ministers were worried—many of them seemed to affect an "unnatural solemnity" and gloom even in the best of times.[26] There was, however, reason enough for good Protestants to worry as they tried to cope with the spread of Roman Catholicism, Unitarianism, and Mormonism, or anxiously anticipated the approach of the millenium. There was constant tension in their efforts to combat the forces of irreligion and infidelity. There was deep uncertainty among rural ministers in their moves to the city and among all who were migrating west. Even more unsettling, probably, was the clergy's precarious economic situation. Most ministers were poorly paid. Many were finding, moreover, that they no longer had tenure in their pastorates and that they could no longer count on being provided for in old age. Harassed and depressed by such matters, clergymen became increasingly run down, vulnerable to the sore throat and to illness generally. Merely the threat of contracting the sore throat and possibly losing one's livelihood thus became an added source of worry and insecurity.[27]

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[25] "Mortality of ministers," *Christian Advocate*, Nov. 25, 1831; Clericus, "On the increase of clerical labours," *Christian Examiner*, 1826, *3*: 91-97, review by H. G., *ibid.*, 1840/41, *29*: 28-29. Senex found overwork to be the reason for over three-fourths of ministers' resignations or transfers to other churches. Clergymen were said to welcome such transfers so that they could use their old sermons over again, as well as be freed of some of their other accumulated chores. Such moves, however, according to Senex, often accomplished little more than to "change the place, but keep the pain." Senex, "Loss of voice and health in clergymen," *loc. cit.* (n. 15, above), p. 250. See also, "Millerism," *Amer. J. Insanity*, 1844/45, *1*: 252.

[26] Ira Warren, "Throat diseases," *Boston Med. & Surg. J.*, 1851/52, *45*: 212; McG., "Why clergymen should not recommend quack medicines," *loc. cit.* (n. 7 above), p. 48.

Apart from such concerns, the ordinary clergyman, in the conduct of his various religious exercises, was also exposed to certain physical conditions which were detrimental to his voice. The recent introduction of anthracite coal to heat buildings appeared to be one of the harmful factors. As another, some church buildings had simply become so large and their acoustics so poor that preachers were forced to shout and strain in order to be heard. More often, as the New York physician John H. Griscom pointed out, there were problems of overheating and poor ventilation. These were conditions which might simply cause members of the congregation to fall asleep during the sermon, but they were also potentially serious sources of various diseases.[28]

Dr. William M. Boling, of Montgomery, Alabama, argued that the chief source of the sore throat lay in the clergy having to pass after preaching from these hot, stuffy church edifices into the much colder outside atmosphere. These changes of venue, he reasoned, exposed the larynx and throat to sudden drops of temperature when they were least able to resist it, that is, in the post-preaching "state of fatigued excitement and congestion." This problem and resulting sore throat was most acute, Boling believed, among the stationary clergy of large towns and cities. Circuit riders were presumed to be less vulnerable than most ministers to all kinds of disease since they spent so much time in the open air. They seldom contracted the sore throat, he thought, because they rarely preached in hot churches; the country churches in which the circuit-rider performed were characteristically "less carefully heated than those of the larger towns and cities."[29]

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[27] "Superannuated, worn-out preachers," *Christian Advocate*, Feb. 1, 1833. For a modern examination of some of these factors, see Daniel H. Calhoun, *Professional Lives in America; Structure and Aspiration 1750-1850* (Cambridge, Mass.: Harvard University Press, 1965), passim.

[28] "Throat diseases," *Boston Med. & Surg. J.*, 1852, *47*: 260; John M. Krebs, *The Reciprocal Relations of Physicians and Clergymen* (New York: Ludwig, 1847), p. 10.

[29] William M. Boling, "Remarks on the importance of good health in ministers of the Gospel, and on the best means of attaining it," *Western J. Med & Surg.*, n.s., 1845, *3*. 290-295. See also M'Cready, "Influence of trades," *loc. cit.* (n. 17 above), pp. 130-131; and Brigham, *Influence of Religion upon Health*, p. 143.

However much the physical character of any of these buildings may have contributed to the sore throat, considerable blame also fell upon the clergy's patently bad pulpit habits. The ecclesiastical press of the period was perennially filled with complaints of sermons that were too long or too repetitive, too monotonous or too loud, and of ministers who habitually screamed at their congregations or used unnatural and grotesque tones. Physicians agreed that such excesses had much to do with the preachers' medical problems. Hamilton had much opportunity to observe this "oratorical vehemence" among the diverse clergymen of western New York's "burned-over district." He considered it "a physiological wonder, that in the heat and violence of their declamations, when their voices are strained to the utmost tension, the vocal chords are not ruptured, or a blood vessel does not suddenly give way." At the same time, of course, certain other clergymen could be readily identified by an opposite sort of ministerial tone, by sermons which were notable for their "unchanging, solemn monotony." The sermons of Unitarian ministers were notoriously dreary. Such preaching could be almost as harmful to the vocal organs as the other kind, Hamilton noted, "since it keeps in exercise but one set of fibers."[30]

The clergyman's sore throat thus claimed its victims among the droners of the pulpit just as it prostrated the more obvious subjects, those who made themselves "martyrs to long and loud preaching." It was found among sedentary Episcopalians as well as among restless Methodists. Ministers of all persuasions appeared to be careless about the conditions which were wrecking their voices.[31] Characteristically, they tended to put off going for medical advice until their maladies were far advanced and difficult or impossible to treat. Just as typically, however, like most of their parishioners, they were perpetually on the lookout for some easy remedy that they could apply themselves.

Almost infinite kinds of therapies for the sore throat did indeed become available to meet this insistent optimistic search, remedies that were as varied and numerous as the suggestions of possible causes. Not infrequently, in the mixed-up therapeutic climate of ante-bellum America, what one individual conceived of as a remedy turned out to be a cause of the disease for another. Some felt that fresh cool air was helpful for the timber of the voice, but others regarded it as harmful. Some criticized the clerical habit of pausing occasionally during the sermon to take a drink of water, arguing that this was injurious to the vocal organs. Others, however, felt that this practice was essential to keeping the voice "clear and sonorous."[32]

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[30] Hamilton, "Morbus laryngeus concionatorum," *loc cit.* (n. 1 above), p. 46; G F. S., "Good sense and eloquence," *Christian Examiner*, 1838/39, *25* 255-260.

[31] "Cautions to ministers," *Christian Advocate*, Nov. 7, 1834; O. C. Comstock, letter to editor, *ibid.*, Sept. 30, 1840.

Most of the therapies for the minister's sore throat reflected basic sectarian differences. Regulars tended to stress such external remedies as frictions of croton oil, blisters, or other counterirritants, to go along with emetics, cathartics, and stimulating expectorants. In 1840 the latter might be tar water, tincture of blood root, or a mixture of calomel and sugar. By the 1860s, better-informed regulars had turned with considerable effectiveness to copper and zinc sulphate, nitrate of silver, or iodine, no longer gargled but applied to the throat with sponges, camels' hair brushes, or syringes.[33]

Thomsonians and other botanical physicians predictably focussed upon the virtues of cayenne pepper for the sore throat while claiming, up to 1840 anyway, that none of the lecturers of their sect had yet "caught the disease." Hydropaths, in turn, urged greater attention to general hygiene, while prescribing rubbing, bathing, and the liberal application of wet cloths to the throat and abdomen.[34] Homeopaths prescribed assorted medication according to very precise symptoms, but in infinitesimal amounts. Home medical handbooks and almanacs also provided a wide variety of therapies for throat disorders, while patent medicine purveyors frequently put special emphasis upon the powers of their nostrums against such ailments. A great favorite among clergymen was "the Rev. J. Covert's mixture," but many individuals stuck to well-tried family recipes.[35]

One of the differences in therapeutic opinion centered on the role of alcohol and tobacco. Daniel Drake recalled that during the 1820s, when there was little of the sore throat to be seen, Ohio valley preachers almost universally drank whisky and enjoyed a smoke immediately after delivering their sermons.[36] Similarly, among the older generation of New England clergymen, "most of them smoked tobacco, and some of them chewed. . . They all drank cider daily, and when fatigued generally took some flip or toddy. . . .

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[32] N. H. Allen, "Loss of voice in public speakers," *Boston Med. & Surg. J.*, 1839, *20:* 221-222.

[33] Hamilton, "Morbus laryngeus concionatorum," *loc. cit* (n 1 above), pp. 47-49, Green, *Diseases of Air Passages*, pp. 193-244; A. P. Merrill, "Essay on sore throat," *loc. cit.* (n. 14 above), pp 148-152; Ira Warren, "Throat diseases," *loc. cit.* (n. 26 above), pp. 344-350

[34] "Minister's throat ail," *Botanico-Med. Recorder*, 1840/41, *9:* 9-11; "Advice to clergymen, public speakers, and other persons who are troubled with sore throat, weak chest, etc.," *Water-Cure J*, 1848, *5:* 72-74; R. T. Trall, *Diseases of the Throat and Lungs* (New York: Wells, 1873), *passim.* For throat disorders, regulars also were often strong advocates of hygiene and even of cayenne pepper Hamilton, "Morbus laryngeus concionatorum," *loc cit.* (n. 1 above), p. 48.

[35] *Ibid.*, p. 48.

[36] Drake, *Systematic Treatise*, II, p. 806.

Small beer made from malt was considered as being nearly as necessary as bread. . . ." By the 1850s, however, temperance reform had gone far to making such practices physiologically and morally reprehensible, and the clergy seemed to be paying the price.[37]

In New England, a number of medical men cautiously questioned the wisdom of extreme temperance reform. One doctor, writing under the pseudonym of Senex, recalled that the clergymen who had followed the earlier regimen had led regular, relaxed lives and enjoyed as good a state of health as anyone. However, temperance pressures had forced latter-day ministers to make drastic changes in their lifestyles. By the 1840s they rarely smoked anymore, almost never took any kind of alcohol, used tea and coffee less and less, and generally "tampered" with their diet more and more. The consequence, Senex felt, was that clergymen had deprived themselves not only of certain quiet pleasures, but of beneficial means of assisting digestion, reducing tension, and generally refreshing themselves. It was no wonder to him that ministers were suffering more illness of every kind, and that their voices were giving out so frequently. Hoping that the reformers of his day would back off a bit, Senex suggested that they look more closely at their Bibles. The book of Proverbs, for one, far from disapproving alcoholic beverages, authorized the Christian to "give strong drink to him that is ready to perish, and wine to those that be of heavy hearts." Further, Senex recalled, the apostle Paul had counselled his follower, Timothy, to "use a little wine for thy stomach's sake."[38]

The question of tobacco was especially stirred up by Joseph Mauran of Providence, who let it be known in 1839 that he had almost never found the clergyman's sore throat among ministers who used the weed. The inference was that the use of tobacco was actually good for the throat, "that smoking or chewing kept up a secretion in the neighborhood of the glottis, favorable to the good condition and healthy action of the vocal box." Mauran's remark stimulated a flurry of correspondence from various corners of New England, as doctors began looking around for cases that would prove or disprove the statement. A number of physicians whose experience agreed with Mauran's actually began advising afflicted clergymen to resume smoking, and several ministers who did take up cigars or tobacco-chewing at this time reported the subsequent disappearance of their sore throats. Meanwhile, other correspondents sent in case studies of robust clergymen who had always smoked and had reached healthy old age. Not unique, apparently, was the old fellow who reportedly had never been seen without a large quid in his mouth, even in the pulpit, but despite that impediment had never lost the ability to "modulate" his voice melifluously.[39]

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[37] Senex, "Loss of voice and health in clergymen," *loc cit* (n. 15 above), pp 248-251, 266-269.

[38] *Ibid.*

For all this, there was precious little room in that age of temperance agitation for such characters. By 1860 a large majority of the clergy seem to have given up both tobacco and alcohol. At the same time, even as medical men were working out better therapies for sore throats, there were indications that ministers were paying more attention to their personal health and taking better care of their voices. We cannot say that clergymen were as yet universally re-vitalized in health as a result of a new obedience to the catechism of hygiene. But a considerable number did adopt substantial regimens of health in the interest of salvaging their preaching voices and careers. Let me close with a particularly striking case of this.

The circuit-rider Peter Cartwright was one prominent preacher who documented his experience with the sore throat. At one point in his career, he related, he suffered from the ailment so badly that he had great fear of being forced to give up the ministry. After much anguish, however, he decided to modify both his preaching and his living habits. He began to pay more attention to his breathing, toned down his voice level, avoided singing too much, guarded against drafts, slept only in warm rooms, began bathing his throat and chest in cold water every morning, and gave up wearing tight cravats. The only medication he took was the occasional use of "a little cayenne pepper and table salt dissolved in cold vinegar," used as a preventive.

After five months of this regimen, Cartwright found himself sounder in voice and health than before his illness, and able once more to preach as long and loudly as anyone should. His subsequent advice to other clergymen may well have been drawn directly out of John Wesley's *Primitive Physick.* It was, in any case, a typical formulation of nineteenth-century America's self-reliant popular hygiene. Cartwright put it as follows:

> Keep your feet warm, your head cool, and your bowels well regulated, rise early, go to bed regularly, eat temperately, avoiding high-seasoned victuals, pickles and preserves, drink no spirits of any kind, and there will be no need of your ever breaking down till the wheels of life stop, and life itself sweetly ebbs away.[40]

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[39] "Impaired voice, in clergymen," *Boston Med & Surg. J.*, 1839, *20.* 113, J. Mauran, "Effects of tobacco on the voice of public speakers," *ibid.*, pp. 203-208, 343-347; S. B. Woodward, "Effects of tobacco on the voice of public speakers," *ibid.*, pp. 172-173, "Prophylactic and curative powers of tobacco," *ibid.*, pp. 316-318.

[40] Peter Cartwright, *Autobiography of Peter Cartwright* (New York: Carlton & Porter, 1856), pp. 405-406; John Wesley, *Primitive Physick*, 13th ed (Bristol. William Pine, 1758).

THE FORENSIC ROLE OF PHYSICIANS IN ROMAN LAW

DARREL W. AMUNDSEN AND GARY B. FERNGREN

When a fiction has gained such a degree of currency that it has become a maxim upon which discussions of an historical problem are predicated, it is advantageous to attack its validity before beginning a fresh analysis of the subject. After one of the authors of the present study had read a paper in Jerusalem at an "International Symposium on Society, Medicine and Law,"[1] Dr. Jaroslav Nemec of the National Library of Medicine quoted the phrase "*Medici non sunt proprie testes, sed maius est iudicium quam testimonium*" and asked whether any participant in the symposium was acquainted with this statement. He said that he had frequently found this quotation attributed to Roman Law but had never been able to locate a source for it, and seriously doubted its authenticity. The significance of this quotation for the history of forensic medicine is obvious: "Physicians are not properly witnesses, but it is rather a matter of judgment than of testimony." When dealing with primary source material as vast as the corpus of Roman Law, it is dangerous to state categorically that a particular statement or concept simply did not exist. It is with an understandable feeling of hesitation that we commit ourselves to the assertion that the quotation under consideration is not to be found in Roman legal literature. A thorough and painstaking examination of the *Corpus Juris Civilis*[2] and other Roman legal sources has failed to bring this elusive quotation to light. Further, we have discussed this matter with several eminent Roman legal historians, both in the United States and abroad, and they are reasonably convinced that such a statement does not appear in Roman legal literature. Our discussions with these scholars also lend support to our belief that the conceptual basis for this quotation is not consonant with classical Roman evidentiary and probatory principles. Accordingly our study will omit consideration of this maxim but we shall examine the relevant evidence that we have found in Roman legal and extra-legal literature.

Those scholars who have believed this quotation to provide the legal basis for forensic employment of physicians in Roman law[3] have, without qualification, drawn some rather far-reaching conclusions. Sidney Smith writes that "the Justinian Code enjoined the cooperation of medical experts in a considerable variety of legal problems—e.g., in the determination of the existence of pregnancy, in cases involving sterility or impotence or legitimacy, in cases of rape, in cases of poisoning, in cases involving the problem of survivorship, in cases which were complicated by the question of mental disease, and in other comparable circumstances."[4] To the contrary, there is in Roman legal sources no evidence that as a procedural matter the use of physicians was stipulated in any of the instances listed by Smith[5] nor are physicians mentioned in the legal sources in even an incidental manner as being consulted in such cases.

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[1] Darrel W Amundsen, "The Liability of the Physician in Roman Law," in *International Symposium on Society, Medicine and Law*, ed by H. Karplus (Amsterdam: Elsevier, 1973), 17 ff.

[2] When citing the various parts of the *Corpus Iuris Civilis*, we shall employ the following abbreviations: D. = *Digesta;* C. = *Codex*, N = *Novellae* The *Codex Theodosianus* will be cited as C Th

The error into which Smith and others have fallen is easily understood when one realizes that their interpretation was predicated upon the belief that there existed a broad legal recognition and forensic employment of physicians' expertise in matters of a medical nature. For there are indeed numerous instances in Roman law where we could expect physicians' contributions both in the law of procedure and in substantive law.

In the *Twelve Tables* it is specified that if a woman gives birth within ten months after the death of her husband, the child will be considered legitimate.[6] This remained the rule until the time of Hadrian, when a question arose concerning the legitimacy of the child of a woman of impeccable character who had given birth in the eleventh month after the death of her husband. Hadrian, after he had consulted the writings of the ancient philosophers[7] and physicians, declared that birth could also occur in the eleventh month.[8] This apparently did not long remain in force since the jurist Ulpian repeats the ten-month stipulation.[9] A lower limit of 182 days for pregnancy cited by Ulpian was set on the basis of the writings of Hippocrates and a rescript of the Emperor Antoninus Pius[10] although elsewhere Paulus wrote that since, on the authority of "the most learned man Hippocrates," a perfectly-formed child may be born in the seventh month, a child born after seven months is legitimate.[11] In the formulation of these rules we see no evidence of direct consultation of living physicians, but merely reference to the authority of philosophers and of the venerated father of medicine.[12]

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[3] The maxim in question has been quoted frequently, without positive citation, e.g., by Alcantara Machado, "O exame pericial no direito romano," *Revista de Criminologia e Medicina Legal*, 1928, *1:* 12; Mina Minovici, *Tratat Complect de Medicină Legală cu Legislatia şi Jurisprudenţa Românească şi Streină* (Bucharest. Socec & Co., 1928), vol. I, 3; Arídio Martins, *Peritos e Perícias Médico-Legais*, 2nd ed. (S. Paulo: Guaíra, 1940), 13; Sydney Smith, "The history and development of forensic medicine," *British Med. J.*, 1951, *1:* 601; J. Arthur Gorsky, "The history of forensic medicine," *Charing Cross Hosp. Gaz.*, 1960, *58:* 34; Lee B. Greene, "Frontiers of medical jurisprudence: Historical background," *Connecticut Med.*, 1962, *26:* 1, J. Le Gueut, "La médecine légale judiciaire," *Bulletin de médecine légale et de toxicologie médicale*, 1966, *4:* 236.

[4] *Op. cit.* (n. 3 above), 600. Cf. Gorsky, *op. cit.* (n. 3 above), 34.

[5] The determination of pregnancy, in which midwives rather than physicians were employed, will be discussed below.

[6] *Twelve Tables* 4, 4.

[7] Another example of the consultation of philosophical sources is in Paulus, *Sententiae* 4, 9, 5: ". . . the rule of the Pythagorean number seems to admit that the fetus appears to be mature after the seventh or the tenth month."

Illness and insanity were of interest to Roman jurists for a variety of reasons. When a person was seriously ill the law ordained that a curator could be appointed to represent his interests,[13] and he could be excused from appearing in court as a defendant or plaintiff[14] or acting as a judge[15] or as an arbiter.[16] Chronic illness exempted one from being a magistrate,[17] bodily infirmity from the obligation of onerous *munera,*[18] and illness[19] or insanity[20] excused one from performing the duties of a guardian. Soldiers could receive a medical discharge[21] and a woman was entitled to bring suit on her parents' behalf when they could not do so themselves owing to illness.[22] The seller of a slave was obligated to inform the buyer of any disease or defect[23] unless it was obvious.[24] Those defects or diseases for which a slave could be returned included any that interfered with the use and services of the slave but excluded minor defects[25] and a fairly detailed enumeration of ailments in both categories is given.[26] Various definitions of diseases are made, e.g., in the context of excuse for non-performance by a free man: "There is considerable difference in fevers, for if a person is otherwise healthy and robust and . . . has a slight attack of fever, or if he has a chronic or a quartan fever, and, nevertheless, is able to attend to his affairs, it may be said that his illness is not serious."[27] "Whenever a chronic disease is mentioned . . . the word . . . should be understood to signify an affection which is constant and not ended by time . . . and attacks a man after his birth, for the word chronic means continuous."[28] In respect to insanity, those who were "giddy, superstitious, irascible and insolent" were considered sane; otherwise "an infinite number of persons" would be considered mad.[29] But persons addicted to habits such as running around temples in a distracted manner and giving oracular pronouncements were held to be insane.[30] It was recognized, however, that apparent insanity could be caused by a physical disease.[31]

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[8] Aulus Gellius, *Noctes Atticae* 3, 16, 12

[9] D. 38, 16, 3, 11. Judging from N. 4, 17, 2, by the time of Justinian the eleventh-month terminus was again in force.

[10] D. 38, 16, 3, 12. This involves cases where a manumitted slave woman gives birth and her child is claimed by her former owner.

[11] D. 1, 5, 12.

[12] The only example we have found of an emperor seeking the opinion of a living physician (except, of course, concerning his own health) has no jurisprudential implications. Vespasian, while in Alexandria, was approached by a blind man who besought him to cure his blindness, asking that the emperor moisten his cheeks and eyes with his spittle. Another, with a crippled hand, begged Vespasian to step on his hand to heal it. Vespasian thought these requests ridiculous. But when they persisted he began to have doubts and asked his physicians to give their opinions. They replied that, in the case of the blind man, his power of sight had not been completely destroyed and could be restored if the "obstacles" (*obstantia*) were removed. Regarding the man with the crippled hand, they held that the joints had been dislocated (*elapsos in pravum artus*) and could be restored if pressure were applied. Vespasian then agreed to do what had been requested and the petitioners were healed. Tacitus asserts that the facts are attested by eye-witnesses "even now when there is no reward for falsehood." This story is recounted by Tacitus (*Histories*, 4, 81), Suetonius (*Life of Vespasian* 7, 2 f.) and Dio Cassius (65, 8). Of these sources, only Tacitus, whose account is the most complete, mentions Vespasian's consultation of physicians

The belief in a sovereign's healing power, although widespread among many primitive cultures and, in the case of scrofula, in the middle ages (see Marc Bloch, *The Royal Touch*, trans. by J. E. Anderson [London: Routledge and Kegan Paul, 1973]), was not common in classical antiquity. A story somewhat similar to that involving Vespasian is told concerning Hadrian's healing of a blind man and a blind woman, although the biographer refers to a source that asserts that in Hadrian's case these things were done as a hoax (Aelius Spartianus, *Life of Hadrian* 25, 1 ff).

[13] D. 3, 1, 4 (Paulus) and 5 (Ulpian).

[14] *Twelve Tables* 2, 1 and 2; D. 4, 8, 21, 9 (Ulpian); D. 5, 1, 75 (Julian), D. 12, 2, 15 (Paulus); D. 22, 3, 19, 1 (Ulpian); D. 27, 1, 13, 7 (Modestinus); D. 42, 1, 53, 2 (Hermogenian).

[15] D. 5, 1, 18 pr (Ulpian); D. 5, 1, 46 (Paulus). The latter passage specifies, strangely, that a judge could be excused for illness but not for insanity.

In the statement of provisions for pleading illness as grounds for nonperformance there is occasional mention of proof ("where proper *cause is shown*") followed by a list of proper causes including illness.[32] Where anyone who promised to appear in court failed to appear and claimed ill health, it is stipulated elsewhere that he must prove it.[33] In cases where a curator is to be appointed to discharge the affairs of one who is considered insane, the praetor is urged to investigate the case most thoroughly "since many people feign madness or insanity" so that they may evade their civil obligations.[34] When a woman does not appear in court because of pregnancy, she is excused but, if she still fails to present herself after delivery, "*proof* must be provided that she was prevented by what is equivalent to illness."[35] As was mentioned above, in suits involving the return of a slave it was stipulated that the buyer had no case where the defect was apparent.[36] In cases where the problem was not self-evident, equitable judgment would depend in great part on a reasonable degree of medical knowledge. It is stipulated, for example, that a slave with enlarged tonsils can be returned only "if the condition has existed for so long a time that the tumors of the throat that have formed cannot now be removed."[37] Enuresis was not considered a sufficient cause for returning a slave unless this was due to a defective bladder.[38] Bad breath was not held to be a serious defect unless caused by a disease of the liver or the lungs "or by some similar reason."[39] A female slave who proved to be barren could not be returned on that account if she was "sterile by nature" but only if her barrenness was caused "by some defect of the body."[40] If a slave woman consistently brought forth dead children she could be returned if this was caused by a uterine affection.[41] Severe punishments were set for those who attempted to cause a free woman to abort[42] and a free woman who deprived her husband of a child without his consent by having an abortion was punished.[43] Although we have found in Roman legal literature no distinction specified between miscarriage and induced abortion, it is reasonable to assume that the question was raised in actual trials. Although suicide, attempted or accomplished, was not a crime,[44] the Emperor Hadrian decreed that a soldier who attempted suicide without good cause would be put to death; if, however, after an investigation it was found that the attempt had been made because of unbearable pain, disease, weariness of life, insanity, fear of dishonor, or grief of some kind, he would be dishonorably discharged.[45] No guidance for determination of cause is given. One convicted of castrating a man was to be punished with death[46] unless the castration had been performed as a remedy for some illness.[47] Poisoning was a capital offense under the *Lex Cornelia de sicariis et veneficis*[48] but no provisions are stipulated for proof. Physicians were subject to liability for willful, negligent or ignorant malpractice[49] but again the jurists and the promulgators of Roman law fail to enlighten us regarding the means whereby judgment was rendered. If a prisoner should die as the result of an accident the guard was culpable unless the death could be proved by witnesses to have been accidental.[50] Whether these would-be eyewitnesses to the accident could include the certification of an examining physician is not indicated. The only instance that we have found in Roman legal literature where there is any mention of certification by a physician involves the medical discharge of a soldier. It was decreed by Gordian III that soldiers who had been discharged owing to illness could not gain reentry into the military on the ground of restored health unless it had been demonstrated "by the report of physicians, and after examination by a competent magistrate, that they had contracted some disease."[51] This seems to indicate that a soldier could in fact receive a medical discharge even without an examination by a physician.[52]

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[16] D. 4, 8, 15 (Ulpian), D. 4, 8, 16 pr. (Paulus).

[17] D. 3, 3, 54 pr. (Paulus).

[18] D. 50, 5, 2, 7 (Ulpian), D. 50, 6, 7 (Tarentenus Paternus); C. 10, 55, 3 (Emperors Diocletian and Maximian); C. 10, 65, 6 = C. Th. 12, 12, 15 (Emperors Honorius and Theodosius).

[19] D. 26, 8, 10 (Paulus); D 27, 1, 10, 8 (Modestinus); D. 27, 1, 12 pr. (Modestinus); D. 27, 1, 40 pr. (Paulus); D. 38, 17, 2, 43 (Ulpian); C. 5, 68, 1 (Emperor Philip I).

[20] D 27, 1, 10, 8 (Modestinus); D. 27, 1, 12 pr. (Modestinus).

[21] C. 12, 35, 6 (Emperor Gordian III); C. 10, 55, 3 (Emperors Diocletian and Maximian).

[22] D 3, 3, 41 (Paulus)

[23] D. 21, 1, 1, 1 (Ulpian)

[24] D 21, 1, 1, 6 (Ulpian).

[25] D 21, 1, 1, 8 (Ulpian).

[26] D. 21, 1 passim.

[27] D. 42, 1, 60 (Julian).

[28] D. 21, 1, 65, 1 (Venuleius).

[29] D 21, 1, 1, 9 (Ulpian)

[30] D. 21, 1, 1, 10 (Ulpian).

[31] D. 21, 1, 4, 1 (Ulpian); D. 21, 1, 1, 9 (Ulpian); D. 28, 1, 17 (Paulus).

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[32] D. 4, 8, 15 (Ulpian).
[33] D 22, 3, 19, 1 (Ulpian).
[34] D. 27, 10, 6 (Ulpian).
[35] D. 2, 11, 2, 4 (Ulpian).
[36] D 21, 1, 1, 6 (Ulpian).
[37] D. 21, 1, 14, 8 (Ulpian).
[38] D. 21, 1, 14, 4 (Ulpian).
[39] D. 21, 1, 12, 4 (Ulpian).
[40] D. 21, 1, 14, 3 (Ulpian).
[41] D. 21, 1, 14 pr. (Ulpian).
[42] E.g., D. 48, 19, 38, 5 (Paulus).
[43] E.g., D. 47, 11, 4 (Marcian), D. 48, 19, 39 (Tryphoninus).

In light of the evidence given above, were physicians employed in a forensic capacity in the Roman legal system? An affirmative answer to this question must be given if the maxim cited at the beginning of this paper is held to be part of Roman law. On the other hand, if the quotation is held to be unauthentic, does a negative answer necessarily follow? We believe that the question can only be answered after a discussion of the evidentiary and probatory principles of Roman law, both classical and post-classical, and by the use of extralegal literary sources.

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[44] The only concern was with the deceased's property. See, e.g., C. 9, 50, 1 (Emperor Antoninus [Caracalla]) and 2 (Emperor Severus Alexander); D. 48, 21 passim; D. 49, 14, 45, 2 (Paulus).

[45] D. 48, 19, 38, 12 (Paulus); D. 49, 16, 6, 7 (Arrius Menander)

[46] C. 4, 42, 1 (Emperor Constantine I) Extra-legal literary sources tell us that Domitian and Nerva had forbidden castration (Dio Cassius 67, 2, 3 and 68, 2, 4; Suetonius, *Life of Domitian* 7, 1). For Hadrian's legislation on this matter see D. 48, 8, 3, 5 and 48, 8, 4, 2.

[47] N. 9, 25, 2.

[48] D. 48, 8 passim.

[49] See Amundsen, *op cit.* (n. 1 above), passim.

[50] D. 48, 3, 14, 5 (Herennius Modestinus).

[51] C. 12, 35, 6.

[52] Mention should also be made of the *Lex Regia* (on which see D. 11, 8, 2) that stipulated that a pregnant woman who died could not be buried until the fetus had been removed in an attempt to save its life. Roberto Bozzoni (*I medici ed il diritto romano* [Naples: Pierro e Figlio, 1904], 130 f.) surely errs in his assumption that, on the basis of this law, no woman could be buried until a medical examination was held to determine whether or not she was pregnant.

From the time of the *Twelve Tables* civil proceedings were divided into two stages: *in iure*, before the appropriate magistrate, where the issue in question was defined and formulated; and *apud iudicem*, where the case was heard and judgment was given by a *iudex*, either selected from a standing list of *iudices* (the *album iudicum*) or chosen by the parties. In certain circumstances an *arbiter* would preside in lieu of a *iudex*.[53] This two-step procedure is generally called the formulary system. There came into existence under the early principate and existed alongside the formulary system the *cognitio extra ordinem*[54] in which the *iudex*, still a private individual but now appointed by the magistrate, was responsible both for defining the issue and trying the case. The formulary system ceased to exist by the early fourth century A.D. and by the time of the late empire (or Dominate as it is frequently called by historians) the *cognitio* procedure was assigned to *iudices* who resembled more closely modern judges than the non-professional *iudices* of the earlier period. In criminal proceedings private delects fell under civil procedure while more serious criminal cases came under the jurisdiction of magistrates invested with imperium.

Ideally the *iudex* was supposed to adopt the ethos of his role, putting aside considerations of friendship and personal advantage, and he was expected to be impartial in his judgment. Where an advocate could defend the probable the judge must adhere to the truth.[55] But classical Roman law did very little to provide the *iudex* with probatory and evidentiary guidance. The doctrine of free weighing of proof prevailed. Rules of evidence and proof did not arouse more than mild interest on the part of the classical jurists.[56] Although the *iudex* was in theory bound by the facts and evidence[57] he was

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[53] It appears that an *arbiter* exercised wider discretionary powers than a *iudex;* e.g., in pecuniary matters the latter would be appointed to decide when a fixed sum was in question, the former when the amount was open.

[54] Also called the *cognitio extraordinaria*

[55] For a forceful enunciation of these principles, see Cicero, *De officiis* 2, 14, 51 and 3, 10, 43.

[56] See, e.g., Fritz Schulz, *Classical Roman Law* (Oxford· Clarendon Press, 1951), 23; W W. Buckland, *The Main Institutions of Roman Private Law* (Cambridge University Press, 1961), 348 and 359; J. A. Crook, *Law and Life of Rome* (London: Thames and Hudson, 1967), 282.

[57] Gerhard Wesenberg, "Probatio," in Pauly-Wissowa, *Realencyclopadie der classischen Altertumswissenschaft* (Stuttgart: Druckenmüller, 1893 -), Vol. 23 (1), 37.

"free to form his opinion concerning the weight of evidence according to his own free will."[58] A rescript of the Emperor Hadrian directs the *iudex* not to rely only on one kind of evidence[59] but to weigh the matter through the use of his own judgment concerning what is credible and what he believes has been insufficiently proven.[60] Later, under the Dominate, although the *iudex* still had a degree of freedom of discretion, the free weighing of proof gradually gave way to the statutory theory of proof which "causes the judge . . . to require certain evidence [on] which . . . alone the proving of an allegation depends."[61] New rules of evidence were introduced: e.g., the principle that "*unus testis, nullus testis,*" (i.e., the evidence of a single witness was to have no weight); or that a witness's social status was to be a major criterion of his credibility; or that the evidence of documents was to be given greater value than oral evidence.[62]

Under the Republic,[63] the Principate[64] and the Dominate[65] *iudices* and magistrates exercising judicial responsibilities were permitted freely to choose *adsessores,* who formed their *consilium,* to advise them in legal proceedings.[66] The *adsessores* were to be men whose wisdom judges deemed essential.[67] No qualifications were specified for being an *adsessor* but the evidence points to their being men learned in jurisprudence, usually advocates,[68] and their assistance appears to have been given in rendering advice on points of law rather than fact. There is no evidence that a judge's *consilium* of *adsessores* contained, either on a regular or exceptional basis, members of professions whose knowledge could be employed in the assessment of fact rather than the interpretation of law, but we cannot categorically assert that such men were never chosen as members of a *consilium.*

During the classical period of Roman law, there were two major exceptions to the principle of the free weighing of proof by a judge. Both involved experts who were assigned a forensic role and the use of whose evidentiary or certificatory talents was made mandatory in certain instances. The oldest of these were the *agrimensores* or land-surveyors.[69] When a flood caused the destruction of the boundaries of a field and provided the opportunity for illegal claims to be made on the land, it was specified that the magistrate must order the boundaries fixed by a surveyor[70] and, if the occasion demanded it, must make an examination himself.[71] The Emperor Constantine decreed that when a question was raised concerning the boundaries of land, after ownership of the land had been established, the surveyor must be directed to determine the truth of the matter so that the controversy might be settled.[72]

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[58] Leopold Wenger, *Institutes of the Roman Law of Civil Procedure,* trans by O H. Fisk (New York. Veritas Press, 1940), 201.

[59] "*Probatio,*" literally "proof."

[60] D. 22, 5, 3, 2 (Callistratus)

[61] Wenger, *loc. cit.* (n. 58 above), Cf. Wesenberg, *op cit* (n 57 above), 38; Max Kaser, *Roman Private Law,* 2nd ed., trans from the 6th German ed by R. Dannenbring (Durban: Butterworths, 1968), 364 f.

[62] See H. F. Jolowicz, *Historical Introduction to the Study of Roman Law,* 2nd ed. (Cambridge University Press, 1952), 462; Buckland, *op. cit.* (n. 56 above), 391 f

[63] Cicero, *Topica* 17, 65.

[64] Fritz Schulz, *Principles of Roman Law,* trans. by M Wolff (Oxford· Clarendon Press, 1936), 242.

[65] Jolowicz, *op. cit.* (n 62 above), 469.

[66] See Otto Seeck, "Adsessor," in Pauly-Wissowa, *Realencyclopadie,* Vol. I (1), 423 ff.

[67] C. 1, 51, 1 (Emperors Diocletian and Maximian).

[68] Seeck, *op. cit* (n. 66 above), 425; Wenger, *op. cit.* (n 58 above), 32, n. 6; 67, n. 27; 202.

The second exception to the principle of the free weighing of proof that involved experts was the employment of midwives to certify pregnancy. During the joint reign of Marcus Aurelius and Lucius Verus the emperors were consulted by a man who claimed that his wife, from whom he was divorced, was pregnant although she denied it. The man petitioned that a custodian be appointed for the woman so that his paternal claim to the child could be protected. The emperors, acknowledging the novelty of their solution, decreed that the house of a respectable woman be chosen in which the woman allegedly pregnant would be examined by three midwives of high standing in their profession and of good character. The appointment of a custodian would depend on the decision of the majority of the inspecting midwives regarding her alleged pregnancy.[73] This provision became part of the Praetor's Edict and the procedure required that, in similar circumstances, if a woman denied that she was pregnant the praetor was required to summon midwives[74] and to select the house of a respectable woman in which she would be examined.[75] It was further specified that neither the husband nor the wife was permitted to select the midwives but that they were to be chosen by the praetor,[76] thus ensuring the employment of experts less susceptible to corruption.[77]

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[69] For a technical discussion of the *agrimensores* that has, however, little to say about their forensic employment and legal basis, see O A. W Dilke, *The Roman Land Surveyors* (New York: Barnes and Noble, 1971)

[70] D. 10, 1, 8 (Ulpian).

[71] D. 10, 1, 8, 1 (Ulpian).

[72] C. 3, 39, 3 = C Th. 2, 26, 1 Surveyors were liable for making false measurements (D 11, 6 passim).

[73] D. 25, 4, 1 pr. (Ulpian).

[74] D. 25, 4, 1, 4 (Ulpian).

[75] D. 25, 4, 1, 6 (Ulpian).

[76] D 25, 4, 1, 5 (Ulpian)

[77] In a case where a widow declared herself pregnant, the Praetor's Edict directed that she notify interested

Although, as we have indicated above, the statutory theory of proof became prevalent under the Dominate, little effect is seen in the use of expert witnesses even though it would be reasonable to expect to find them in a judicial system that had become highly bureaucratic. The only new forensic experts for whom we have found evidence under the Dominate are the handwriting experts[78] who compared written documents where there was an accusation of forgery.[79]

We have found no evidence to suggest that physicians enjoyed any forensic status in Roman law; nor is there in Roman legal literature any indication that physicians performed legally-mandated forensic functions in any way comparable to those exercised by the *agrimensores* and midwives. There are, however, a few instances where physicians do appear in a forensic or advisory role in Roman literature or in Greek literature written during the period of the Principate.

Perhaps the best-known example is recorded by Suetonius, who writes that of the twenty-three wounds Julius Caesar sustained when he was assassinated only one was mortal in the opinion of the physician Antistius.[80] This statement, unfortunately, poses more questions than it answers. Was the examination motivated by any intention of using the physician's opinion in court? On whose initiative did Antistius conduct his examination? Was it prompted merely by the curiosity of the friends of the deceased? Or was it, perhaps, done by order of a magistrate? If directed by a magistrate, was it an extraordinary or common procedure?

According to Greene, "Pliny tells us that the bodies of those who died were examined to ascertain the cause of death"[81] but Greene does not cite the location of this alleged passage and we have been unable to find such an assertion in Pliny's writings.[82] The consequences of this statement attributed to Pliny should be discussed. If the bodies of the deceased were regularly examined to determine the cause of death, it is reasonable to assume that

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parties (presumably heirs to the estate who would be affected by the birth of a legitimate heir to the deceased) or their agent twice within the month subsequent to her husband's death. In this case, if the "interested parties" wished they could send up to five free women to examine her, none of whom could touch the woman's abdomen during the inspection without her permission. Considerable safeguards were to be followed during delivery to ensure against the introduction of a surreptitious infant. (D. 25, 4, 1, 10 [Ulpian].)

[78] "Qui comparationes faciunt."

[79] C. 4, 20, 3 (Justinian), N. 5, 4, 2, 2

[80] Suetonius, *Life of Julius Caesar* 82, 3.

[81] *Op cit.* (n. 3 above), 1.

[82] We assume that Greene refers to Pliny the Elder's *Historia Naturalis* A search of Pliny the Younger's *Epistles* has also failed to locate this quotation.

this was not done on the initiative of the relatives or friends of the deceased but under the direction of a magistrate. If, as Greene seems to assume, these examinations were conducted by physicians, it follows either that private physicians enjoyed a legally-mandated forensic status while performing this function or that there was a body of forensic medical experts designated for such a role. But even if Pliny did make the statement attributed to him by Greene it does not necessarily follow that physicians were regularly, or, for that matter, ever so employed. It is quite possible that magistrates were required to ascertain the cause of death without any stipulation that they must use the services of medical experts, in which case the magistrates' determination of cause does not impinge upon a discussion of the forensic role of physicians in Roman legal procedure except in a peripheral and then quite negative way.

There are cases remarkable for the absence of physicians where they might be expected to appear if they were regularly or even commonly employed in ascertaining the cause of death. A famous case involves the death of Germanicus in A.D. 19. Germanicus died after a lingering illness (*diuturno morbo*)[83] at Antioch. Germanicus believed that he had been poisoned by his enemy, Piso, the governor of Syria, and this belief was widely held. After his death his body was displayed naked in the forum of Antioch.[84] Dio Cassius writes that the condition of his body, exhibited to all who were present in the forum, revealed that he had died of poisoning.[85] Tacitus held that it was disputable whether the body bore signs of poisoning, for the indications were variously read depending on the sympathies of the individual.[86] Suetonius writes that the suspicion of poisoning was heightened not only by the dark spots that appeared over his entire body and the froth that flowed from his mouth but also because after Germanicus' body had been cremated his heart was found unburnt among the ashes. According to Suetonius this is held to be characteristic in cases of poisoning affecting the heart.[87] When Piso was tried in Rome, Vitellius, one of the prosecutors, introduced the failure of Germanicus' heart to burn as evidence of poisoning and Piso countered by asserting the common belief that this peculiarity also held in the case of persons who had died of heart disease.[88]

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[83] Suetonius, *Life of Caligula*, 1, 2.

[84] Much to the indignation of Tiberius. See Tacitus, *Annals* 3, 12.

[85] Dio Cassius 57, 18, 9 f.

[86] Tacitus, *Annals* 2, 73.

[87] Suetonius, *loc. cit.*

[88] Pliny, *Historia Naturalis* 11, 71, 187.

Germanicus' last request was that his friends should ensure that his death be avenged. If medical certification of the cause of death had been mandatory or even common, it is unlikely that Germanicus' wife and friends, who were consumed by a passion to bring Piso to justice, would have avoided this step unless they felt that a medical examination would weaken their case. In that event it would be remarkable for Piso's defense to have failed to draw attention to the absence of medical certification. None of our primary sources, however, mentions the use of physicians either in examining the body of Germanicus or in providing a medical opinion once the case came to court; moreover, and significantly, none remarks on the absence of medical testimony in this case where the charge of poisoning was of such importance.[89]

Whether operating under the principle of the free-weighing of proof or the statutory principle, there is nothing that would prevent a judge or magistrate performing a judicial function from summoning physicians for their expert opinions. We have, however, found only two instances where a physician may have been summoned by a Roman magistrate to give an expert opinion. We add the qualification "may" because in both cases it is equally plausible that the physician appeared at the request of the defense.

Philostratos records that the Sophist Adrian, who lived in the second century A.D., while in Athens was harassed by a certain man. Adrian's pupils ordered their slaves to beat the pest and this resulted in "a swelling of the intestines" followed by death thirty days later. Philostratos observes that the man had contributed to the cause of his own death by drinking excessive quantities of undiluted wine during the period of his illness. Adrian, charged with murder by the relatives of the deceased, was tried before the Roman proconsul of Greece. Philostratos asserts that he was assisted in his defense by the pleas of a weeping crowd of Greek admirers and by evidence presented by a physician regarding effects of the wine.[90] The question whether the physician was a witness for the defense or an impartial expert called by the magistrate cannot be answered.

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[89] The common opinion was that Piso had employed the services of a woman notorious for her proficiency with poisons, Martina, a creature of Piso's wife (Tacitus, *Annals* 2, 74). Martina had been sent to Rome for Piso's trial but died en route Although a supply of poison was said to have been found concealed in a knot of her hair, no indication of suicide had been found on her body (*ibid*, 3, 7) No mention is made of who examined her body.

[90] Philostratos, *Lives of the Sophists* 587 f. It can be objected that, since the parties to the case seem to have been Athenians and the trial was held in Athens, this passage is not properly introduced in a discussion of Roman procedures As a capital case, however, the trial was held before a Roman magistrate and his discretionary powers in the matter of evidence and proof would be similar to those exercised by a judge hearing a case involving Roman citizens.

A somewhat different case which apparently involves a defendant summoning a physician to give testimony concerns Apuleius, who, in a trial before a Roman magistrate in which he was charged with practising magic, was accused of inflicting epilepsy on a woman by magic. Apuleius replies that the woman had been brought to him by a physician for his inspection. The physician testified in court that Apuleius had done nothing to the woman other than ask her whether she heard noises in her ears and, if so, in which ear the ringing was more pronounced, and that the woman had departed immediately after answering that her right ear was the more troubled one. Apuleius then compliments the magistrate on the astuteness of his questioning of the physician and the plaintiffs and launches into a discussion of the symptoms and etiology of epilepsy, quoting Plato (*Timaios*), Aristotle (*Problems*) and an unspecified work of Theophrastos. He says that he was careful to quote the arguments of renowned philosophers and to avoid any references to the works of physicians or poets so that his accusers would know that philosophers also had learned the remedies and etiology of diseases in the course of their researches. He again mentions that the testimony of the physician had made it clear that the procedure Apuleius had followed in the examination of the woman was absolutely proper.[91] It is likely that the physician was called on Apuleius' initiative. If he was summoned by the magistrate, which is possible, he could not be considered in the strict sense an impartial witness since he testified as to fact (i.e., his having brought the epileptic woman to Apuleius). The only opinion that he gave was that Apuleius had followed proper procedure in the questioning of the epileptic woman.

These two passages are the only cases we have found in which there is specific mention of the expert testimony of physicians in Roman courts.[92] As we have seen, however, there are in Roman law a number of instances where

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[91] Apuleius, *Apologia* 48 ff.

[92] There are three additional references to physicians in court, but these do not illustrate a forensic role Cicero (*Oratio pro Rege Deiotaro* 17 f.), when he had heard that Phidippus, the physician and slave of a subject monarch, was to give testimony, admits that he suspected that this slave physician had been bribed to give false evidence on a trumped-up charge of poisoning. But the testimony given turned out to have nothing at all to do with medical matters.

Philostratos, in his *Life of Apollonius of Tyana*, records that this miracle-worker and ascetic philosopher, who lived in the late first century A.D , was tried before the emperor Domitian on a variety of charges that included the dismemberment of a young boy Although he was acquitted before he had the opportunity to present his defense, Philostratos quotes the speech that Appollonios had prepared to give in court. This oration, a lengthy *apologia pro vita sua*, included the projected calling of physicians as witnesses in his defense (8, 7, 14). They, however, were merely to support his alibi that he had in fact been present at the home of a seriously-ill friend on the night that the boy in question had been murdered one could reasonably expect expert medical certification or testimony, e.g., in cases where proof of illness is required for excuse from various civil obligations; where a slave's defect must be proven to be caused by a specific physiological problem; in cases of abortion versus miscarriage; in the question of whether castration had been performed owing to illness; and in trials involving medical malpractice. Also medical testimony could reasonably be expected in cases of homicide or injury. On the other hand, however, there is lacking any specification of the forensic employment of physicians as a mandatory procedure or any recognition of forensic status for physicians in Roman law. Given the range of evidentiary and probatory discretion held by magistrates and judges even under the Dominate and the freedom of plaintiffs and defendants to call witnesses on their own initiative, we believe that physicians were employed in legal proceedings only on individual initiative, be it of the court, plaintiff or defendant. It appears that the degree of credence given to the medical testimony of physicians depended entirely on the discretion of the court. Whether a physician was called also depended on the discretion of the court or of the parties to the case. Where a judge or magistrate, properly or improperly, believed himself competent to make a medical determination without consulting a physician, he appears to have been free to do so. On the other hand, a judge or magistrate who recognized his own limitations will have had the prerogative of seeking an expert medical opinion. Similarly when a plaintiff or a defendant believed that his own case would be strengthened by the testimony of a physician, he was free to solicit the testimony of a physician.[93]

There seems to have existed as loose and ill-defined a use of physicians as expert witnesses in Roman courts as that which prevailed in classical

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Apuleius (*Metamorphoses* 10, 11) tells the tale of a physician who served as a member of the panel of judges in a trial employing Greek rather than Roman procedures This physician gave evidence which, although medical in nature, simply involved attestation of fact and circumstances in which he had been a participant rather than expert opinion. See Darrel W. Amundsen, "Romanticizing the ancient medical profession. The characterization of the physician in the Graeco-Roman novel," *Bull. Hist. Med* , 1974, *48* 323 ff.

[93] In a case where *res ipsa loquitur* it is indeed unlikely that a physician's testimony will have been sought. A passage from Juvenal (*Satires* 16, 7 ff.) is of interest here. Discussing the unfair advantages of members of the military, Juvenal speculates that if a civilian is assaulted by a soldier, the beaten man "will keep quiet about it and not dare to exhibit to the magistrate the teeth that have been knocked out, or the black and blue lumps all over his face, or the one surviving eye for which the physician offers no hope." Although bitter and satiric, this passage probably illustrates the procedure that will have been followed in the case of injury The injured party, if physically able, simply presents himself to the magistrate and displays his wounds. If Juvenal's hypothetical civilian had gone to court, what criterion would be used in determining the accuracy of the reference to "the one surviving eye for which the physician offers no hope" will have depended upon the judge's discretion.

Athens.[94] The only major difference was that in Roman law, in addition to the parties to a trial having the freedom to call a physician as a witness, the judge or judicial magistrate, for whom there was no real equivalent in Athenian procedure, had within his probatory discretion the power to summon a physician for an opinion.

There remains the problem of the forensic medical experts of Roman Egypt (who are after the mid-second century always referred to in the papyri as *demosioi iatroi* [public physicians]). In a previous paper[95] we discussed the evidence from the papyri, which suggests that during the period of Roman domination a physician's examination and subsequent report were required in cases of violent or accidental injury or death. Since no equivalent procedure apparently existed in Ptolemaic Egypt and is not attested for Roman Egypt until after slightly more than a century of Roman domination, it seems reasonable to attribute the practice to the influence of Roman law. However, the question is a difficult one and in our previous paper we deferred discussion of the matter to the present paper. The extent to which legal procedures illustrated by the papyri reflect Roman law is a hotly-contested issue. Even the degree to which Roman Egypt was peculiar within the Roman Empire is by no means a subject upon which there is unanimity of scholarly opinion. This especially holds true for the period after the *Constitutio Antoniniana* of A.D. 212 which granted Roman citizenship to the vast majority of the free population of the Empire. Until the late nineteenth century it was commonly held that after A.D. 212 the entire Empire was unified in the use of Roman legal procedures. But with the discovery of the papyri ample evidence became available that seemed to show that Roman Egypt, even after A.D. 212, was indeed very different in its administrative structure and law from what was known of the rest of the Empire. As additional papyri are made available to scholars and the previously published papyri are reanalyzed, the pendulum of scholarly opinion is beginning to swing back slightly toward the earlier view. It now appears that although Roman Egypt was in many ways unique, in many respects it was considerably less distinct than had been previously thought.[96]

We are struck by the fact that often the historian's conclusions are affected as much by the type of sources at his disposal as by what the sources tell him directly. Roman legal literature leaves many questions concerning the actual application and function of Roman law unanswered. Conversely, when dealing with Roman Egypt where the papyri in a down-to-earth, day-by-day manner illustrate the law of Roman Egypt in action as it affected the people of all strata, we often are able to determine with certainty little of the essence of the law itself in force there. As Leopold Wenger writes, ". . . it is hardly ever possible [from the papyri] to discover conclusively the fundamental principles of law."[97] Is it not possible, indeed even quite reasonable, to say that, in the case of the practice of forensic medicine in the Roman world, we have from Roman legal sources and the Egyptian papyri two sides of the same coin; that in the papyri we simply see Roman law in action with the magistrates exercising their freedom of probatory discretion in a way similar to the rest of the Empire and that, if papyri were available from throughout the Empire these procedures would be illustrated as quite uniform? This is indeed a most tempting thesis. One could argue that the papyri do not prove conclusively that the medical examination of a person killed or injured by violence or accident was in fact mandatory in Roman Egypt, that we see here merely the exercise of the magistrates' prerogatives; that the reference in one papyrus[98] to the body of a person who had died an allegedly accidental death but was not permitted burial until an investigation was held is not an accurate reflection of prevailing conditions in Egypt or, on the other hand, that such a stipulation was in force probably throughout the Empire. A major obstacle to the argument that the forensic employment of physicians in Roman Egypt was not a unique feature of that province, however, is the existence of the *demosioi iatroi,* the public physicians who appear in Roman Egypt from the mid-second century A.D. When we encounter these *demosioi iatroi* they are always performing a forensic role. Such a title does not seem to appear anywhere else in the Empire. One could suggest that they are equivalent to the *archiatri populares* of some other areas of the Empire but no evidence exists that even hints that the *archiatri populares* had any forensic function whatever. In Roman Egypt not only did magistrates send *demosioi iatroi* to conduct medical examinations but private individuals sometimes specifically requested magistrates to send a *demosios iatros* to conduct an examination in cases of violent or accidental injury or death with a view toward possible legal action. This differs considerably from an individual's requesting *his* physician to appear as a witness in court. The petitioners in the papyri rather request that a physician employed in a forensic role by the state be sent as an impartial official to conduct an examination. Such a body of legally designated medical experts enjoying a recognized forensic status is unattested throughout the rest of the Empire and their very existence does not appear consonant with the probatory and evidentiary principles of Roman law.

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[94] See Amundsen and Ferngren, "The physician as an expert witness in Athenian law," *Bull Hist. Med.*, 1977, *51* 202 ff.

[95] "The forensic role of physicians in Ptolemaic and Roman Egypt," *Bull Hist. Med* , 1978, *52*. 336 ff.

[96] See, e.g , Naphtali Lewis, "'Greco-Roman Egypt': Faction or Fiction?," in *Proceedings of the Twelfth International Congress of Papyrology* (American Studies in Papyrology 7, Toronto: Hakkert, 1970), 3 ff.

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[97] *Op. cit.* (n. 58 above), 70.

[98] P. Oxy. 475.

If we are correct in believing, as we do, that the forensic employment of physicians in Roman Egypt was unique to that province, how did the practice originate? Wolfgang Kunkel believes that the papyri show that in Egypt "both before and after the *Constitutio Antoniniana* an uninterrupted legal tradition prevailed which, looked at as a whole, rested throughout on the pre-Roman legal system and consisted of both Greek and native Egyptian elements."[99] This "pre-Roman legal system" that was comprised "of both Greek and native Egyptian elements" was the law of Ptolemaic Egypt. But from Ptolemaic Egypt there is no evidence to suggest a forensic role for physicians in any way similar to that which we find in Roman Egypt. Under Roman domination several professions acquired forensic status that did not have a forensic role under the Ptolemies: those of the *horiodeiktai, architektones, tektones, oikodomai, logothetai*[100] and physicians. We cannot determine why this happened on the basis of the evidence at our disposal. We venture to advance the conjecture, however, that the judicial system in Roman Egypt was simply more conducive to such development than that which we find in Roman law. Whereas in Roman law, at least until the Dominate, a private individual was usually appointed as a judge to decide a specific case, whether under the formulary system or the *cognitio extra ordinem,* in Roman Egypt the judicial system was part of a complex bureaucratic organization. Those trying cases were not private individuals designated to hear specific cases but were "subordinate officials or officers"[101] themselves part of the bureaucratic structure. However, a judicial system whose few probatory and evidentiary principles are founded on a theory of free weighing of proof is not apt to prohibit the use of extra-legal professionals in a probatory capacity; but neither is it likely to encourage their use, much less to make their services mandatory or to create legally-designated groups of forensic experts.[102] But the more intricate the bureaucracy becomes the more it begins to delegate both function and responsibility, creating categories of subordinates to whom both status and specified functions are assigned and, as part of the structure, these functions become procedurally mandatory.[103] Under the Dominate the judicial system as seen in Roman law also became more complex and a vast bureaucratic system slowly developed that was "Byzantine" both in a factual and pejorative sense. Whereas the judicial system in Roman Egypt was a continuation and refinement of the procedures taken over from Ptolemaic organization, a system already highly bureaucratic, the legal procedures in force under the Dominate were still those of Roman law, however modified, and Roman law as it has come down to us simply had not developed a broad legal recognition of forensic status for the majority of professions whose talents lend themselves to forensic employment.

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[99] *An Introduction to Roman Legal and Constitutional History,* 2nd ed., trans. by J. M Kelly (Oxford· Clarendon Press, 1973), 78.

[100] See Amundsen and Ferngren *op cit* (n. 95 above), 342. *Geometrai,* the Greek equivalent of the Roman *agrimensores,* had played a forensic role during the Ptolemaic period (*ibid.,* 341 f).

[101] Wenger, *op cit* (n. 58 above), 262 f.

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[102] The relatively early use of the *agrimensores* and midwives in Roman legal procedures is, of course, a notable exception. Recall the admission of the Emperors Marcus Aurelius and Lucius Verus that their decision to employ midwives in a certificatory capacity was indeed quite novel.

[103] Even in areas of peripheral forensic significance we see mandatory procedures in Roman Egypt for which there is no provision in Roman Law; e.g., a papyrus published in *Études de Papyrologie*, 1939, *5:* 85 ff. (P. Cairo Boak 21), written in A.D. 296 records that it was required by law that written agreements pertaining to dowries be evaluated by a goldsmith and a tailor.

THE ADOPTION OF GERMAN MEDICINE IN JAPAN: THE DECISION AND THE BEGINNING*

JOHN Z. BOWERS

In March 1870 the Japanese government officially adopted German medicine; the runner-up was British medicine. The first German professors arrived in Tokyo in September 1871, and for the next two decades they dominated the school that was to become the prestigious Faculty of Medicine of Tokyo Imperial University. All Japanese medical faculties adopted the philosophy and practices of German medical schools, and continued to do so until the middle of the twentieth century; the German influence is readily manifest even today.

From 1641 until the arrival of Commodore Matthew Cailbraith Perry in 1863 Japan was *sakoku,* sealed off from the West, save for a small Dutch trading post, Dejima in Nagasaki. Her medicine was *Kampō,* Chinese traditional medicine, together with a few elements of the European system derived from the European doctors at the trading post who taught small numbers of eager Japanese students.

The most respected teacher in Nagasaki was a German, Phillip Franz Balthasar von Siebold (1796-1866), who masqueraded as a Hollander. Other German physicians in Nagasaki also left an enduring mark in Japan. The importance of German medicine was further enhanced by the fact that most of the texts from which the Japanese studied were of German origins, often in Dutch translations. Thus German medicine was the major Western influence in isolated Japan. Finally, at the time when Japan faced the decision on which system to adopt, German medicine was preeminent in the world.

William Willis and British Medicine

After 1863 European and American legations were established in Japan, with Great Britain soon ascending to a leadership role. During the critical decade 1861-71, when the rule of the Tokugawa Shogunate collapsed and Imperial governance was restored, British medicine became the dominant foreign influence. This was attributable to the first medical officer to serve at

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the British Legation, William Willis (1837-94), who was a hero of the restoration movement.[1]

Of Scots-Irish lineage, Willis took his premedical and preclinical studies in Glasgow and completed medical school in Edinburgh in 1859. The teacher who influenced him most deeply was James B. Syme (1799-1870), a professor of surgery who was renowned for his innovations in amputations and his pioneer work in antisepsis and anesthesia. With opportunities for practical surgical experience limited in Edinburgh, Willis moved to the Middlesex Hospital in London. Eighteen months later, in 1861, he joined the staff of the British Legation in Tokyo as physician and surgeon.[2]

While the Chinese disdained surgery as a desecration of the human body, more venturesome Japanese practitioners were undertaking limited surgical procedures. According to a German physician in Nagasaki in 1850: "Amputations are performed very rarely and almost exclusively the minor and less dangerous procedures."[3]

In the treatment of fractures the Chinese strapped slender strips of wood along the site of the injury, but the related joints were not immobilized; there was no satisfactory method for treating compound fractures.

While France backed the Tokugawa Shogunate, the British, led by Sir Harry Parkes, Minister Plenipotentiary to Japan, 1865-83, supported the restoration of the Mikado. At Parkes's request, Willis served as surgeon to the Imperial Army in 1868 during their victorious battles with the Tokugawa forces in Kyoto, and Tokyo and in northeast Japan.[4] He treated the casualties of both armies, and introduced military surgery with the use of anesthesia and antisepsis. The Japanese customarily abandoned their wounded to die on the battlefield, but Willis insisted on humanitarian care of casualties. He returned to Tokyo as a hero, was decorated by the emperor, and appointed medical director of *Dai Byōin* (Great Hospital). There he developed an educational program that was the forerunner of the Tokyo Imperial University Faculty of Medicine.

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[1] Choei Ishibashi and Teizo Ogawa, *Oyatoi Gaikokujin-Igaku (Foreign Employees-Medicine)* (Tokyo: Kashima Kenkyusho Shuppan Kai, 20 September 1969), 71-84.

[2] Biographical information on Willis, courtesy of Keeper of Manuscripts, University Library, Edinburgh. D. J. Cronin, Senior Administrative Officer, Faculty of Medicine, University of Edinburgh.

Formerly known as Edo, the city was renamed Tokyo or "eastern capital" on September 3, 1868. We shall use the name Tokyo for simplicity.

[3] Otto Mohnike, "Aanteekeningen over de Geneeskunde der Japanezen," *Geneeskunde Tijdschrift von Nederland-Indie*, 1853, *1* 286.

[4] E Satow, *A Diplomat in Japan* (London, 1929) "Memorandum by Dr. Willis," Inclosure 1 in No. 7 *Sessional Papers*, House of Commons, 1868-69, lxiv: 34-35. "Obituary of William Willis," *The Lancet*, 24 February 1894: 507-08

The fifth article of the Charter Oath of Five Articles proclaimed by the young Emperor Meiji in the spring of 1868 stated, "Wisdom and knowledge shall be sought all over the world in order to establish firmly the foundations of the Empire." This launched Japan on a campaign of borrowing and adapting from Western nations that is unparalleled in history. Japanese missions visited America and Europe, and foreign advisors came to Japan.

The army was at first patterned after the French system, but after their decisive defeat in the Franco-Prussian War in 1871, the German army became the model. In the early years the navy was developed by Holland, and later by Britain and America. The legal system was French. The organization of the postal system, harbors, and railways followed the British pattern, while education and land development policies were based on American models.

The advice of Bismarck was responsible for Japan's adherence to Imperial rule, and Prussian nationalism and bureaucracy became the basis of Japan's national organization.

Guido Fridolin Verbeck

Naturally, the question arose as to the choice of a system of medicine, and in 1869 the Imperial Court asked for the opinions of two physicians, Iwasa Jun and Sagara Chian, who had studied Western medicine in Nagasaki. Both leaned toward German medicine, but were sensitive to the prestigious position of William Willis. They therefore sought the counsel of a Dutch Reformed missionary from America, Reverend Guido Fridolin Verbeck (1830-98), and his became the decisive voice.[5]

Born in Zeist, the Netherlands, on 23 January 1830, Verbeck studied civil engineering at the Polytechnic Institute in Utrecht. He immigrated to America in 1852 and served as foreman at a foundry in Tanktown, Wisconsin. Verbeck consecrated his life to missionary service during a critical attack of cholera in Arkansas, and he was ordained at the Dutch Reformed Seminary in Auburn, New York, in 1859.

The call to Japan originated from a conversation among three American clergymen on the U.S.S. *Minnesota* as it lay at anchor in Nagasaki Bay in the summer of 1855: Samuel Wells Williams, L.L.D. (1812-84), secretary to the American Legation in Peking and the leading Chinese scholar in the

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[5] W. E. Griffis, *Verbeck of Japan, a Citizen of No Country. A Life Story of Foundation Work Inaugurated by Guido Fridolin Verbeck* (New York: Revell Co , 1901). G. F. Verbeck, "Early Mission Days in Japan," *The Japan Advertiser* (Saturday, 30 October 1926).

Far East, had served as flag interpreter for Commodore Perry; the Reverend E. W. Syle; and Chaplain Henry Wood. They discussed the need for American missionaries in Japan and decided to send appeals to the Episcopal, Presbyterian, and Reformed mission boards in America requesting their support. Verbeck's application to the Reformed Board was accepted and financial support was forthcoming from the South Reformed Church, at Fifth Avenue and 21st Street in New York City. The long history of the Netherlands in Nagasaki and Verbeck's heritage made him the logical choice.

When Verbeck arrived in Nagasaki on 7 November 1859 he found to his dismay that although missionaries from the West were permitted to teach in Japan, the dissemination of Christian doctrine was forbidden. He circumvented the ban by using the *New Testament* as his textbook for instruction in English. In 1864 the *Bakufu*, staff of the Tokugawa Shogunate, endorsed a request from the military governor of Nagasaki that, because of his success, Verbeck be allowed to open a school with official status for instruction in foreign languages and an introductory course in Western science.

Verbeck gradually extended his teaching at the new school to political science, diplomacy, and international law. It afforded the best opportunity in southwest Japan for such studies, and it attracted the most talented young men from the feudatories who sought knowledge of the wider world. Those fiefs were proponents of the restoration of Imperial rule, and after the Meiji Restoration Verbeck's students became the architects of the new Japan.

In the summer of 1869 at the behest of his former students Verbeck moved to Tokyo to establish a new government school and to serve as counselor to his graduates. Thus, while Iwasa Jun and Sagara Chian were deliberating on the question of a system of medicine, they were directed to seek Verbeck's advice: he told them that German medicine must be the choice. At the end of 1869 the two Japanese submitted their recommendation that teachers of medicine should be invited from Germany.

The only problem was how to reward Willis.[6] During the battles of 1868 he had developed friendships with Saigō Takamori[7] (1828-77) and other leaders of the Satsuma clan in southwest Japan. Arrangements were made with Saigō for Willis to be invited to Satsuma as medical director of a new hospital and medical school in Kagoshima, the capital city of the prefecture. He soon attracted bright students and gave them instruction in English as well as in medicine. Willis took a Japanese wife who bore him a son. He returned to England in 1877.

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[6] Kagoshima Daigaku Igakubu Nijūgonenshi [*Twenty-Five Year History of Kagoshima University Medical School*] (Kagoshima, 1969) Hachiro Sato, *Eii William Willis Ryakuden* [*A Short Biography of English Doctor "William Willis"*] (Kagoshima-Ken Kyoin Gojokai Insatsu-bu, 15 April 1968).

[7] Saigō Takamori was a *samurai*, retainer of the *daimyo*, who became a senior member of the Meiji government. He broke with other leaders in a dispute over Korea in 1873 and led a samurai revolt in 1877 He died on the battlefield and is a legendary hero in Japan today

Selection of Leopold Mueller

When Prussia's ambassador to Japan, Maximillian August Scipio von Brandt (1835-1920), received a request on 18 March 1870 for two German teachers of medicine, he recommended to Berlin that they should be drawn from the military:

> Because military medical officers would, by nature of their status, be regarded in all circles with the highest esteem, would be accepted by the aristocracy and might even become personal physicians to his Majesty, the *Tennō*.[8]

Benjamin Carl Leopold Mueller (1824-93), *Oberarzt,* was selected to lead the German medical mission because, as he wrote, "I had accomplished quite satisfactorily a somewhat similar mission in Haiti."[9]

Born on 24 July 1824 in Mainz, Hesse, Mueller studied medicine in Bonn in 1842-44 and then in Berlin, where he graduated in February 1847.[10] His surgical training was conducted at Le Charité Hospital in Berlin, and his doctorate in medicine was based on studies in surgery, with gynecology and forensic medicine as minor subjects. With a commission in the Army Medical Corps, he taught at the Pepiniere School for military medical officers in Berlin.

Haiti relied on doctors from Europe and America for her sparse medical services, and in 1858 Mueller arrived in Port-au-Prince to serve as a government medical officer. Torn by repeated revolutions and assassinations, the island was in a primitive state, riddled by disease and starvation. Public health measures were not instituted until 1847, under a *Jury Medical,* which functioned as an office of hygiene.[11] But its programs were inadequate and ineffectual. A flimsy medical school opened in 1808, and in 1844 Haiti's President Philippe Geurrier proposed that it be reorganized according to the American pattern; a revolution thwarted his effort.[12] President N. Fabré Geffrard, who held office from 1859 until his exile in 1867, made another attempt to reorganize and strengthen the school, and Mueller became the leader of this reform.[13]

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[8] Benjamin Carl Leopold Mueller, "Tokio Igaku: Skizzen und Erinnerungen aus der Zeit des geistigen Umschwungs in Japan, 1871-76," *Deutsche Rundschau,* 1888, *57*: 316. Tennō (heavenly prince), a term for the emperor, is used widely today and connotes the deep respect of his subjects.

[9] Mueller, "Tokio Igaku" (n. 8 above), p. 316.

[10] Ishibashi and Ogawa, *Oyatoi* (n. 1 above), pp. 85-98

[11] C. Boulos, unpublished, undated manuscript.

[12] R. P. Parsons, *History of Haitian Medicine* (New York: Paul B. Hoeber, 1930), pp. 62-72.

On his return to Berlin in 1867, Mueller was sent to East Prussia to control an epidemic of typhus and to conduct a general evaluation of health problems. He was promoted to the rank of *Oberarzt* shortly before his selection to go to Japan.

As his deputy Mueller selected Theodor Hoffmann, who had studied medicine in Breslau and had also graduated in Berlin. He trained in internal medicine at Le Charité Hospital with Ludwig Traube (1818-76), a pioneer in experimental pathology in Germany and a specialist in pulmonary diseases.

The conditions of their employment were articulated at a preliminary conference in Tokyo attended by von Brandt, Sawa Moriyoshi, Minister of Foreign Affairs, and Matsudaira Yoshinaga, the Japanese director of the existing medical school.

Mueller and Hoffman were to be attached to the German Legation and would deal directly with the Japanese *Mombushō* (Ministry of Education). They would have complete authority for all educational matters, including the selection of medical students, and would be the direct superiors of all Japanese and foreigners employed by the school. Financial matters and the conduct of the students were to be the responsibility of a Japanese director. This independence was considered by Mueller essential to the success of the mission.

The outbreak of the Franco-Prussian War on 19 July 1870 delayed their departure, and Mueller feared their mission would be abandoned. Shortly after the Treaty of Peace was signed in Frankfurt on 10 May 1871, however, the two were directed to prepare for an early departure. One month later they sailed for Japan, by way of New York. After a leisurely one-month transcontinental tour with stops at Niagara Falls, Omaha, and Salt Lake City, they embarked at San Francisco. Their vessel, the S.S. *America,* entered Tokyo Bay during a typhoon on 23 August and the two disembarked at Yokohama.

The Existing School

The school that Mueller and Hoffmann reorganized had been founded as *Shutōjo* (Vaccination Institute) at Kanda-O-tamaga-ike, Tokyo in 1858 by five Japanese physicians who had studied Western medicine.[14] After six months it was destroyed by fire and moved to Shitaya Izumibashi. In 1860, *Shutōjo* became *Seiyō Igakujo* (Institute of Western Medical Education) and was given financial support by the military government. Dormitories for students were erected, and limited instruction in Western medicine was instituted. In 1868 the Meiji government took the school over and renamed it *Igakujo* (Medical Institute). In 1869 the medical school became officially known as Tōkō (East College), but was often referred to as *Igakujo*. The sister institution, formerly *Kaiseisho,* also *Kaiseijo* (Institute for Development), had opened in 1863 and offered instruction in European languages, literature, and practical arts. When *Igakujo* became *Tōkō, Kaiseisho* was renamed *Nankō* (South School).

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[13] Mueller, "Tokio Igaku" (n. 8 above), p. 316.

[14] Tokyo Daigaku Igakubu Sontau Hyakunen Kinenkai, *Tokyo Daigaku Igakubu Hyakunenshi* (Tokyo, 1967).

The school's associated hospital was of more recent origin. In November 1868 Joseph Bower Siddall (1840-1929), a British surgeon attached to the Legation, was asked by the Meiji government to open a military hospital at the Tōdō *yashiki*[15] Shitaya, Tokyo. In it he treated casualties of the final battles between the Imperial forces and the Tokugawa supporters.[16] As the number of casualties diminished public patients were admitted to the hospital, which was called *Dai Byōin*. It was merged with *Igakujo* in 1869.

Iwasa Jun, the first Japanese representative to welcome Mueller and Hoffmann, visited them in Yokohama on 25 August. He expressed gratification at the culmination of the recommendation he and Sagara Chian had submitted two years earlier. Mueller and Hoffmann then made a round of courtesy calls, concluding with an audience with the *Tennō,* Emperor Meiji.

First Days at School

Their first visit to the school took the form of a military parade: in full dress uniform crowned with spiked helmets, and led by a caparisoned German cavalry detachment, Mueller and Hoffmann rode through the gate of the Tōdō *yashiki*. They found a group of spacious central buildings with wide porches, tile roofs, and sliding screens (*shoji*) as external walls. On the periphery were smaller shed-like structures along drainage ditches filled with foul water. There was a dilapidated garden, and the compound was surrounded by a high wall.

Mueller made a brief address on the nature of their mission, which was translated by Shiba Ryokai, a physician member of the faculty of the school who had studied Western medicine in Nagasaki. They were officially greeted by Satō Shōchū, who had just succeeded Iwasa Jun as the Japanese director, and the student supervisors, Ishiguro Tadaatsu and Hasegawa Yashushi. Satō Shōchū had also studied Western medicine in Nagasaki.

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[15] During the Tokugawa Shogunate the several hundred *daimyo*, feudal lords, were required to spend alternate years in the capital to bind their allegience and avert revolts. Many of them erected *yaskiki* (buildings-grounds) as residences. The Tōdō fief was in the Kansai region near Ueno City

[16] J. B. Siddall, "Surgical experiences in military hospitals in Japan," *St Thomas's Hospital Reports,* 1874, n.s. *5*: 85-112.

The improvised classrooms were a far cry from the splendid halls in which they had studied in Bonn and Berlin:

> About 300 students were introduced to us. They were sitting in a series of halls with ten to sixteen students at a table. Each student had his *hibachi,* small heater, and his pipe beside him. They were reading aloud from books, which appertained for the most part to the same scientific field. But they read different chapters and the books were in different languages. All of them were reading at the same time in the well-known Oriental sing-song manner, so that one had the impression he was entering a synagogue.
>
> Japanese overseers, who also had *hibachis,* pipes and cups of tea, sat at the larger tables. Their chief task was to assure that the students read loudly and without any pause and to explain, if possible, passages to the students. But they understood most of them no better than did their students.[17]

As soon as a student had acquired a superficial knowledge of a language, he would read any book that was recommended; the thickest were the most popular. Many students were reading specialized texts that were beyond the knowledge of a German medical student.

Before coming to *Igakujo* the students had usually spent several years as apprentices to medical practitioners, so the school was regarded as nothing more than a supplement to that apprenticeship—Mueller described it, " . . . a place to satisfy one's curiosity in regard to certain anatomical facts."[18] There were no teaching schedules and students were not required to attend classes—they came and went as they wished. The interaction between students and their teachers consisted largely of irrelevant questions being asked and meaningless answers being given.

Medical practitioners did not command public respect, and even a personal physician of the most affluent *daimyo* was regarded as little better than the servant who walked beside his master's horse. Since medicine was a hereditary occupation that sons were constrained to enter, medical students represented the lower strata of society. Mueller's low opinion of the medical students was based on the fact that a great number of men unfit for any other profession took up medical studies, and furthermore many of the students of this school were already far advanced in age and incapable of any intellectual pursuits as a result of their many years of Chinese education.[19]

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[17] Mueller, "Tokio Igaku (n. 8 above), pp. 318-19.

[18] *Ibid.*

The Tōdō Yashiki

The *yashiki* was totally unsuited for use as an educational facility or a hospital: "The inner buildings consisted of a series of large and relatively low halls, and many small rooms for the concubines, singers, dancing girls, and attendants."[20]

Slops and other refuse were tossed indiscriminately into ponds and ditches, and, as Mueller commented wryly, "with the stagnant waters they form as many breeding grounds for infectious diseases as there are inner courts."[21] Any efforts to introduce sanitary practices and hygiene in the hospital were frustrated by the enduring custom of families of patients moving in with them. They brought servants, clothing, and bedding, as well as cooking equipment, charcoal, and food. The patient, the family, their servants, and all their paraphernalia were stuffed into a single, poorly ventilated room, where they ate and slept. But the custom could not be revoked, and Mueller commented: "We would have no patients had we not accepted their families."[22]

The Japanese agreed with Mueller that the *yashiki* could not serve as a hospital, and they gave the highest priority to the construction of a new facility. They asked him to design a replica of a leading European hospital as "a temple of Aesculapius whose dome would illuminate with electric beams all of Tokyo. A huge European monument with the newest ventilation, heating and facilities."[23]

Since such a structure would have required the services of European architects and many years to complete, Mueller designed a more practical facility, with the medical school as the main building and two adjoining rows of barracks to serve as a hospital and to house a pharmacy, and housekeeping and other services. The exterior would be in harmony with Japanese architectural design, except that the porous *shoji,* sliding paper doors, would be replaced by doors and windows, and the interior would be on a European pattern.

[19] *Ibid.,* pp. 321-22.

[20] *Ibid.,* p. 322

[21] *Ibid.,* pp. 321-22.

[22] *Ibid*

[23] *Ibid.,* p. 328

The entire project was suddenly dropped, however, and Mueller discovered that the Japanese were not sincere in their plans for a lavish hospital project; it was only a sham intended to demonstrate their determination to adopt Western medicine.

Efforts were then directed toward improving the *yashiki*. The *shoji* were replaced by panes of glass for better illumination, benches and desks replaced *tatami* (mats), and stoves were installed so that students no longer shivered by their *hibachis*. Two lecture halls were erected, one for the basic sciences and the other for clinical lectures.

The Japanese Staff

Interpreters were essential, but only one competent person was available. He was Miyake Shū, who had lived with an American missionary physician for four years and had gained reasonable proficiency in English, as well as some understanding of medicine and its terminology.[24]

A small army of Japanese were introduced to Mueller as officials, teachers, aides, and servants—all were said to be there to work for the new teachers from Germany. But only a few of them were of any use; the best was Taguchi Kazuyoshi, who had some knowledge of medicine and who became an excellent prosector and assistant in the anatomy laboratory.[25]

Mueller decided that save for Taguchi and a few others the purpose of the staff was to spy, not only on the German teachers but on each other. He would have nothing to do with them and insisted that he and Hoffmann select and train their own assistants.

A further frustration was the antagonism of the older local Japanese physicians and officials, who opposed the visitors at every opportunity because they were jealous of their superior knowledge, as well as that of their students.

Teaching Materials

The teaching materials Mueller found at the *yashiki* were disappointing—parts of a skeleton and a few Auzoux papier mâché anatomical models.[26] The handful of outdated medical texts were in Dutch or English, with just a single German text, Bock's *Buch von gesunden und kranken Menschen*. Thus their major resources were the books they had brought with them. For a number of months they improvised other materials, only to discover that an adequate supply of texts, skeletons, and instruments were stored in crates near an access area so they could be removed immediately in case of an outbreak of one of the frequent fires that ravaged Tokyo. There were five complete and well-preserved skeletons with craniums, anatomical models and charts, microscopes, texts, and ophthalmological instruments. All had been crated for so long and without any records of the contents, that not one member of the Japanese staff knew of their existence.

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[24] Miyake later studied medicine in Germany and became professor of pathology and medical history at the school in 1882.

[25] Taguchi also studied in Berlin and became professor of anatomy.

[26] L. T. J. Auzoux (1797-1880) of Paris, whose models were widely used to teach anatomy, especially when cadavers were not available. They were referred to as "artificial anatomies."

Initiating the Educational Program

Satō Shōchū and his Japanese colleagues wished to assign the older student to advanced standing, but Mueller refused to establish such ratings until he had determined each student's knowledge of anatomy, physiology, pathology, and surgery. Eight days after his arrival in Yokohama, therefore, Mueller examined the nineteen students the Japanese had nominated as the best of a total of about three hundred. The results were as he had anticipated:

> Not one of them was prepared in anatomy and physiology; not one of them could describe the circulation of the blood, (although more than one of them had studied cardiology); not one was able to identify the right from the left thigh and explain the reason for his choice.[27]

Their limited anatomical nomenclature was in Chinese, and the terms were based on speculation rather than on actual dissections. As an example, *kin-miaku,* ligament, was applied to any structure—blood vessel, nerve, or lymphatic—that vaguely resembled a ligament.

Mueller would have preferred to defer instruction until the students had completed their premedical training, but he accepted the fact that, for practical purposes, he was obliged to begin classes without any delay in order to maintain the confidence and support of the Japanese.

When the more demanding nature of the new program became known, about half the students, many of whom had been at the school for three to four years, departed; when Mueller gave his opening lecture in osteology on 4 September 1871 there were 140 students in his class.

After Mueller completed an introduction to osteology, he lectured on anatomy and Hoffmann on physiology. In an effort to accelerate the educational program, they added lectures in bandaging, pharmacology, and the examination of patients. But the students were unable to cope with the additional lectures and they were discontinued.

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[27] Mueller, "Tokio Igaku" (n. 8 above), p 442.

The language of instruction was determined by the language spoken by the interpreter—German or English. Mueller and Hoffmann used carefully prepared manuscripts, and all medical terms were written in large block letters on the blackboard. The interpreter translated the lecture sentence by sentence, and after class the manuscript was duplicated for distribution to the students. Mueller also compiled his lectures with annotated references and they could be purchased by the students.

In the afternoon the best students, to whom Mueller had given more detailed descriptions during his lecture, repeated it to the others. Each Saturday the students were examined on the material presented in the lectures during the previous week. Hoffmann followed the same procedure in physiology.

At the end of December the Minister of Education, Ōki Takato (1832-99), agreed that the number of students permitted to continue should be determined by an examination. The majority of the students failed; fifty-nine continued. Subsequent withdrawals for health and other reasons left the class with a total of thirty-five students.

The need for student assistants fluent in German became more pressing, and Mueller selected the six most promising candidates to whom he gave personal instruction for one and a half hours each day. But again the procedure was complex because the only text available was a grammar to teach German to English-speaking people. It was necessary therefore to find an English-speaking interpreter to translate the grammar into Japanese; the students then translated the Japanese text into German.

The Preparatory School

After a few months Mueller and Hoffmann were convinced that the establishment of a preparatory program was imperative. The students' lack of knowledge of chemistry, biology, physics, as well as German, was an almost insurmountable barrier. Ambassador von Brandt was asked to make arrangements with Berlin for the recruitment of a faculty to teach those subjects. At the same time it was decided that with the class reduced to thirty-five because of the shortage of teachers, no new students would be accepted until the preparatory school was in operation.

The Japanese recommended two men, whom Mueller described as a beer brewer and a salesman, to teach the premedical subjects.[28] It was only after

[28] *Ibid*, p. 445.

heated arguments that he was able to employ two Germans, a Dr. Simmons and a Mr. Wagner, on a temporary basis until the arrival of the new faculty. Simmons studied at Kiel and Tubingen and had come to Japan just before the outbreak of the Franco-Prussian War. His original commission was as advisor on the construction of the European-style hospital until the arrival of Mueller. Wagner has been wasting his talents teaching chemistry, mathematics, and physics in an inferior secondary school.

In January 1873 the medical school was awarded a legal charter and its name was changed from *Igakujo,* also *Tōkō,* to *Dai-ichi Daigaku-ku Igakkō* (Number One University Medical School).

The premedical faculty was selected by von Brandt, who was in Prussia on home leave, and officials of the Japanese Embassy in Berlin. The first contingent arrived in March 1873: Hilgendorf, who had been *Dozent* of zoology at the Leopold Academy in Dresden, to teach mathematics and natural history; Cochius, formerly *Oberlehrer* at a secondary school in Berlin, to teach mathematics, physics, and chemistry; and Funk, a philologist from Berlin, to teach Latin and Greek. They were joined in July by Holtz, to teach geography and history. The preparatory staff was completed a few months later with the arrival of Lange, another philologist from Berlin, to teach foreign languages, and Schendel, also from Berlin, for mathematics.

Mueller recommended that the preparatory school be converted to a full German gymnasium-type program to emphasize a broader, superior education. The course would be seven years' duration, with instruction in the sciences, modern languages, and Latin. After completing the gymnasium a student would have five years in the medical school, to be followed by three years in a postgraduate medical faculty in Germany. The Japanese refused to adopt this proposal, however, on the grounds that it was too long and they could not plan ahead for such an extended period. Some years later Mueller learned to his amusement and satisfaction that his entire proposal was adopted and implemented in 1886.

The Curriculum

With the preparatory school adequately staffed, Mueller established a seven-year curriculum with an eighth year in practical work in the hospital and polyclinic. The first three years were designated for premedical courses; followed by four years of clinical instruction. There was a comprehensive examination at the end of the hospital and polyclinic year.

The philosophy was Germanic, with emphasis on the lecture and demonstration. The major thrust in the basic science years was on anatomy, entailing detailed dissection of the human body. The diagnosis and treatment of disease was taught in clinical lectures, during which a few students made a partial examination of the patient and were asked a few questions by the professor. He then gave a long lecture on the disease. The German language was taught throughout the three preparatory years and in the first year of the medical curriculum; there was no instruction in any other modern foreign language.

First Year—Third Preparatory Class: German, arithmetic, general geography, Japanese and Chinese studies. (Students who had completed a comparable course in a German school were not required to enroll in this class.)

Second Year—Second Preparatory Class: German, geometry, geography, history, medical Latin, introduction to natural sciences.

Third Year—First Preparatory Class: Scientific German, Latin, mathematics, chemistry, physics, and natural sciences.

Fourth Year: Anatomy, German, German composition, Latin, mathematics, chemistry, physics, and natural sciences.

Fifth Year: Dissection, physiology, general surgery, laboratory experiments, histology, natural sciences, chemistry, and physics.

Sixth Year: General and social pathology, therapeutics, pharmacology, surgical specialties, operative surgery, methods of clinical examination.

Seventh Year: Surgical and medical polyclinic, physical examination, surgical anatomy, surgical specialties, and ophthalmology.

Eighth Year: Polyclinics in all subjects, hospital assignments, and lecture-reviews of major subjects.

The students went through a ritualistic annual public examination before members of the German diplomatic delegation and high officials of the Japanese government. The crowning event was the attendance of the Emperor Meiji at an examination, which gave great pride and pleasure to Mueller, as well as to his German and Japanese colleagues.

At the successful completion of his studies, the student received a diploma that declared him qualified to fill any medical post in Japan.

Admission Requirements

With the design of the curriculum established, criteria were developed for the selection of students. Age, preliminary education, and physical condition were the major considerations:

1. The age requirement was fourteen to sixteen years. Since birth records were unknown in Japan, age was estimated on the basis of physical and intellectual development. Moreover, an applicant's statement on his age had

to be adjusted, since an infant was considered to be one year old at birth. Further, the Japanese New Year, which was on a lunar basis, occurred eight to ten weeks after the European year begins.

2. A basic Chinese-Japanese education commensurate with the age of the applicant. This was continued in the first preparatory school year because a knowledge of Chinese was considered the mark of an educated man.

3. A strong physical condition with no impairment of the sense organs. Mueller deemed this stipulation important because the practice of medicine had historically been a haven for the physically and mentally unfit.

In order to enroll young men from all levels of society admission was not restricted to students who could pay the tuition fee, which was the equivalent of 40 *Deutsche Marks* (DM) a month. It covered lodging, food, books, uniforms, and incidental supplies. Students who could not afford to pay the fee were required to enter government medical service after graduation at a monthly salary equal to at least 600 DM. The service requirement continued until the debt had been repaid, but no more than one-fifth of the salary could be deducted each year for that purpose. Thus, the minimum time spent in the service was usually five years.

Theodor Hoffmann painted a rosy future of the impact of the school in a communication to *Deutsche Gesellschaft* in the spring of 1873.[29] After tracing its development since 1871 he noted that thus far European medicine had exerted a minimum of influence on Japanese medicine: "... but in the course of one decade it is reasonable to expect good results and broader influences considering the excellent capacity of the Japanese for learning, and also considering that arrangements have now been made to give them the necessary foundations in science and language."[30]

Japanese Customs and Their Problems

Many Japanese traditions and customs were alien to the European way of life. They were perplexing and frustrating. Adoption of boys, to insure that the family name was continued, was a common practice at all social levels. A merchant might adopt his chief clerk in order to give him a personal interest in the firm. Thus one might find a family drawn from five or six sources, with no kinship ties, calling each other father and son, mother and daughter, brother and sister.

Several medical students tried to use the practice of adoption to avoid payment of the tuition fee. As an example, Mueller cited the case of a second-year student who asked to be placed in the tuition-free category. Investigations revealed that his parents were under no financial stress, and the request was denied. Undaunted, the student arranged to be adopted by a married couple of low economic status who were unable to pay the tuition fee. Mueller then had no choice but to cancel the tuition requirement.

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[29] Theodor Hoffmann, "Die Heilkunde in Japan und Japanische Aerzte," *Mitteilungen der Deutschen Gesellschaft für Natur und Volkerkunde Ostasien's*, 1873, Bd *1* (1): 23-25; Bd. *1* (4), 9-20.

[30] *Ibid*, p. 25.

Although an ordinance required their attendance, students frequently skipped classes without a satisfactory excuse. They would explain an absence on the grounds of a personal illness or the illness or death of a parent. But Mueller was aware of the common practice of adoption when a male parent died and he refused to accept such an excuse: "Since any Japanese, save the elderly, will adopt a new father the moment his father dies within a relatively short period the father of one and the same student could die two or three times."[31] A student claiming illness was required to be examined by Mueller or Hoffmann before his explanation was accepted.

Another Japanese practice Mueller could not abide was their prompt acceptance, *tadaima* (immediately), of an assigned task, and their failure to carry it out. Mueller scolded the students repeatedly for this, and they eventually responded promptly to his requests, which they referred to as *Tadaima Germanica.* On the other hand, they continued to dawdle at a request from a Japanese—*Tadaima Japonica.*

The students were required to wear a German-style uniform consisting of a close-fitting grey jacket and trousers, a blue cap, and leather boots; their hair had to be clipped in the German tradition to accommodate the cap. They had formerly worn the usual Japanese loose-fitting robes, but they now overdid themselves in the opposite manner by having their uniforms tailored so tight that their movements were restricted and awkward. They also found the uniforms far too drab, so they had their jackets lined and the collars trimmed with brightly hued violet, red, or blue silk.

The interpreters were required to wear European suits and they found the change in attire more difficult to cope with. It was an amusing sight to see them struggle in and out of coat sleeves and trouser legs when they were accustomed to slipping into a wide-sleeved flowing robe.

Mueller recalled one example of the adjustment problem:

> On New Year's Day 1874, I saw an official in the required European clothing returning from a ceremony at the Court. As he was leaving the palace he discovered that it had been raining and the streets were sloppy. Without a moment's hesitation he took

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[31] Mueller, "Tokio Igaku" (n. 8 above), p. 454.

> off his trousers and proceeded along the street majestically attired in a black swallow-tail coat lined with white silk, a white vest, black top hat, holding an umbrella, wearing Japanese sandals and covered below the waist by nothing more than a loin cloth, which he only wore because of the threat of severe punishment.[32]

The study habits of Japanese students had none of the methodical steadfastness and punctuality to which the German mission was accustomed. This was accounted for by the absence of a uniform system of keeping time in Japan. The day and the night were divided into six variable units called *toki* (parts), and the length of a *toki* not only changed every two weeks, but also varied with latitude and even within a large city. Thus in Tokyo on any one day *toki* varied from one and a half to two and a half hours in different parts of the city. It was therefore almost impossible for a Japanese to adhere to a schedule. Mueller suffered these irregularities for a few months and then required all students to purchase European watches so that they could follow a uniform time schedule.

Another barrier to establishing an orderly teaching schedule was the fact that there was no week in the Japanese calendar. The first, seventh, thirteenth, nineteenth, and twenty-fifth days of each month were for rest. The problem was compounded by numerous and often unscheduled holidays. This was solved by introducing the European week.

The succession of frustrations at times drove even Mueller to despair:

> Twice I was close to resigning, but the exceptionally talented students and the occasional recognition that I received would give me renewed incentives that, however, were soon dampened by new obstacles. I led a life of enduring hope and fear and suspended pain.[33]

Life Styles

For a short time Mueller and Hoffmann and their wives had temporary quarters in the English Hotel, the only foreign hostelry in Tokyo. They then moved into more permanent quarters in a main building of *Kin-enji* at Keimeiin in Uneo Kurumazaka, the Buddhist family temple of the Tokugawa dynasty. Because of their spaciousness, relative isolation, and extensive grounds, the temples were favorite abodes for foreigners.

Two Japanese youths lived with the two families in order to learn German; one was the son of Iwasa Jun and the other of Shiba Ryokai, a chief physician at the school.

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[32] *Ibid.*, p. 451.

[33] *Ibid.*, p. 326

For the first year the Germans were under round-the-clock surveillance by the Japanese. A bodyguard of eight police—four mounted and four on foot—accompanied them every time they left the temple compound, ostensibly for protection, but in larger measure to follow their movements. When the Germans passed through a *sekisho* separating one section of the city from another, their escorts handed the gatekeeper small wooden plates on which their names were stamped. All the plates were collected and recorded with the name of the *sekisho* at the end of each day.

A doorkeeper at their residence recorded all arrivals and departures and the names of any guests. This information was also passed on to the police on a daily basis. These repugnant practices continued until the end of 1872, when after many complaints by Mueller the guards were reduced to four; the following year the practice was discontinued altogether.

They did of course take lessons in the Japanese language from native instructors, but this led to nothing but frustration. After one and a half years with a private tutor, Mueller found the sentence structure too complex, and, with classical Japanese indecision, his teacher was unable to correct any errors in pronunciation. Furthermore, the Japanese grammar text was written in the stilted style of archaic manuscripts. Thus when Mueller gave orders to the household servants in his antiquated Japanese and curious pronunciation they fled to his wife, who spoke sufficient and accurate conversational Japanese to be able to tell them what he required. Mueller eventually dismissed his tutor, and through his daily intercourse with the Japanese acquired sufficient fluency in the language and the colloquial manner of expression for him to converse with patients and travel throughout the country with ease.

As the number of German teachers increased, they moved from Ueno to homes in the compound of the former Kaga *yashiki*.[34] Located in the Hongo section of the city, the compound was on higher ground than Todo. A new hospital and medical school were opened at Kaga at the end of November 1876.

The letters of Emma Schultze, wife of Emil August Wilhelm Schultze, Mueller's successor as professor of surgery, tell of a rather isolated community with limited social contact with the Japanese.[35] This was occasioned in large measure by the language barrier: Wilhelm Schultze described their limitations in the language as *verstummeltes Japanisch* (Japanese with an amputated tongue). Beyond the German community their main contact was with members of the diplomatic corps of other European countries, principally Russians and Italians.

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[34] The lord of Kaga feudatory in Ishikawa on the Japanese sea was the richest *tozama* (outer lord). He had four yashikis occupying over 250 acres and staffs of several thousand persons. W. J. Beasley, *The Meiji Restoration* (Stanford: Stanford University Press, 1972), p. 46

[35] Emma Schultze, umpublished letters, April 1878-81.

The graduating medical students gave an annual party, *gochisō,* for the professors as an expression of their gratitude. Each May the German and Japanese faculty held a banquet that was attended by high officials of the Ministry of Education. When a popular professor was returning to Germany, the Japanese gave him a lavish farewell dinner replete with Japanese dishes, jugglers, and geisha, who attended the guests and serenaded them with the *koto* and the *samisen.* The guest of honor received gifts and an ornate testimonial in Japanese lauding his contributions to the advance of Japanese medicine and surgery.

In turn, some of the German professors gave a series of farewell parties to which they invited Japanese physicians and their German colleagues on the faculty of the school.

The wives enjoyed the meticulous and constant attention of their Japanese servants. When they wished to leave the house, "clap hands or ring a bell and just call*jinrikisha* and two minutes later, the vehicle is awaiting us at the door." In the course of her daily two-hour *jinrikisha* ride, Frau Schultze found the street scenes "quaint and entertaining during the day, but the evenings are ten time more beautiful and interesting." At dusk the streets became illuminated with lanterns, and pedestrians carried a lantern or a torch: "at night it is a sea of red and white lanterns." But she preferred the tranquility of their compound: "Here in our quiet Kaga yashiki we are spared all of this."[36]

Musicals were a favorite diversion, with the Germans forming chamber music groups that played pieces by Beethoven, Mozart, Haydn, and Schubert. And of course there was the traditional *kaffee klatsch.*

Eagerly awaited letters and newspapers from home arrived in batches and were perused repeatedly. Correspondents in Germany were urged to use the Atlantic-Pacific mails rather than the slower Austrian Lloyd Line through Trieste.

A crowning annual event was the Emperor's birthday festival at which all nations with missions in Japan were represented. The Japanese men dressed in formal European suits, while their wives wore gowns that were a combination of European and Japanese styles. But the Chinese preferred their traditional attire:

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[36] Emma Schultze, unpublished letter, 6 October 1878.

> The most comical appearance was the Chinese minister in his native costume . . . he was elderly and smiled at every lady and shook every hand. The members of his entourage were also dressed in Chinese costume.[37]

Frau Schultze found the Emperor's birthday party "far more animated than the festival for General Grant, which was predominantly American."[38]

Deutsche Gesellschaft für Natur- und Völkerkunde Ostasiens

Leopold Mueller was a man of broad cultural interests, and on the Kaiser's birthday, 22 March 1873, he convened a small group of Germans in Yokohama and Tokyo to found a scientific and cultural society, *Deutsche Gesellschaft für Natur- und Völkerkunde Ostasiens.* Their objective was

> to create a common focal point for individual scientific endeavors and thereby encourage research on one hand, and on the other, to make available results of research to a wider audience.[39]

At its first general meeting on 26 April of that year the group adopted statutes that included a key statement that the society would afford its members opportunities for the exchange of views and experiences on East Asia and thereby promote investigations of the countries of the region. The society would also publish a journal, *Mitteilungen der Deutschen Gesellschaft für Natur- and Völkerkúnde Ostasiens,* for the dissemination of knowledge on East Asia.

The monthly meetings would alternate between Tokyo and Yokohama. The language of the meetings and the publication would be German, but the executive committee was empowered to grant the right to speak in another language to a member or a guest who had not mastered German. At no meeting, however, could more than one lecture be presented in another language.

Membership was not restricted to Germans, nor to residents of Japan. The international membership expanded as the society enrolled members in Hong Kong, Shanghai, Peking, Paris and Berlin.

The officers for 1873 were: chairman, Ambassador von Brandt; vice chairman, Mueller; secretaries, Franz M. Hilgendorf, of the premedical faculty, and P. Kemperman, secretary-treasurer of the Imperial German Embassy; librarian, Cochius, also premedical; and archivist, E. Mammelsdorff. Thus three of the six founding officers were on the faculty of the medical school.

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[37] Emma Schultze, unpublished letter, 11 November 1879.

[38] General Ulysses S. Grant (1822-85) and his wife made a triumphal two and a half years round-the-world tour beginning May 1877. The last country visited was Japan, 21 June-3 September 1879. The festival was held in Ueno Park in Tokyo on 25 August 1879. R. T. Chang, "General Grant's 1879 visit to Japan," *Monumenta Nipponica,* 1969, *24* (4): 373-92.

[39] *Mitteilungen der Deutschen Gesellschaft für Natur- und Volkerkunde Ostasiens,* 1873, Bd. *1* (1): 1.

The papers presented at the meetings ranged over a broad spectrum of fields: archeology; botany, meteorology; anthropology; geography; medicine; topography; Japanese culture; Japanese tea societies; Japanese skulls; Japanese history; *Kak-ke* (beriberi); Fujiyama; equipment to be taken on an expedition to Hokkaido; and midwifery in Japan. Mueller demonstrated his versatility by presenting an extensive discourse on Japanese music and musical instruments.

The library of the society grew rapidly, and in his annual report of 31 January 1874 von Brandt stated that it contained 273 volumes, of which half were in Japanese and half foreign. The holdings included specimens from natural history and ethnography, as well as products of Japanese art and industry. Von Brandt presented a collection of lace from Ceylon. Other early donations included models of a Japanese teahouse and temple, samples of Japanese medicines, photographs of silk spinning and weaving, and the skeleton of an Ainu.

A major acquisition in the summer of 1873 was the library of Alexander von Siebold, an interpreter with the British Legation, and one of the Japanese collections of his famous father, Philipp Franz Balthasar von Siebold, which the family had turned over to the government of Japan.

Exchanges of *Mitteilungen* with other journals were established with a total of fifty-four far-flung scientific and cultural societies in such centers as Berlin, Batavia, Dresden, Vienna, Leipzig, Turin, the Smithsonian Institution in Washington, Amsterdam, and Moscow.

When von Brandt returned to Berlin in 1874 Mueller assumed the chairmanship of the society until his departure the following year.

Promoting German Nationalism

The emphasis on the German language required that after three years a student must be able to follow lectures without an interpreter, and after five years to express himself clearly and precisely in German, both orally and in writing. Mueller defended the exclusive use of German on the grounds that learning more than one foreign language would have been too difficult. He acknowledged that the language of the school could have been English or French, but pointed out the significance of a mastery of German for postgraduate programs:

> The number of good European institutions for continuing medical studies in the German language is far greater than in any other language, and no country has a richer wealth of excellent translations of valuable works than Germany.[40]

That the Japanese had become increasingly aware of this fact since Mueller's departure was confirmed by a statement in the 1883-84 calendar of the school:

> Since today, the natural sciences and the literary arts of Europe may be studied with the greatest depth and breadth in Germany, it is essential that students master German in order to be able to pursue such studies from German texts.[41]

At a time when Britain, France, Russia, and Germany were at the height of their imperialistic ambitions in the Far East, Mueller recognized that the medical school was an important instrumentality for spreading German influence beyond the sphere of education:

> The physicians and pharmacists who have been trained in German and will gradually spread across this Empire could become our best pioneers for building strong relationships between our two countries. At first the Japanese purchased German texts, drugs, instruments, and chemicals from the medical school and the hospital. Later our products became available more widely and the Japanese were completely satisfied with them. Therefore, they expanded business relationships with us and an increasingly active trade was developed.[42]

Another testimonial to the broadening impact of the school had come from the *Centralverein für Handels-geographie* (Central Organization for International Trade), which on several occasions had acclaimed its positive role in the expansion of mercantile trade with Germany.

Development of a Japanese Faculty

From the beginning of the German era an underlying goal was to train Japanese to succeed the visitors. A period of study in Germany was considered of paramount importance. In 1870 the same year German medicine was adopted officially, twelve Japanese were sent to Germany for postgraduate study specifically focused on research at their government's expense. Their leader was Osawa Kenji, who studied neurophysiology with Hermann von Helmholtz (1821-94) and Emil DuBois Reymond (1818-96). He returned to Tokyo after four years and was appointed assistant to Ernest Tiegel, professor of physiology. In 1878 Osawa began a second four-year study period, and chose to study medical chemistry with Felix Hoppe-Selyer (1825-95). When he returned to Tokyo in 1882, Osawa was appointed professor of physiology and medical chemistry; in the same year Miyake Shū was appointed professor of pathology. They were the first Japanese to become professors.

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[40] Mueller, "Tokio Igaku" (n. 8 above), p. 449

[41] *Ibid.*

[42] *Ibid.*

A stream of the best graduates continued to flow to Germany. The subjects of their studies were determined in part by disciplines that needed to be filled on the faculty. Naturally, they came back to Japan imbued with the philosophy of their German teachers. Thus, as replacements for the German faculty, they perpetuated to an even more pronounced degree the hierarchical traditions, the overriding emphasis on research, and the concept of each professor being self-sufficient in his institute.

By 1888 all of the school's professors were Japanese, save Erwin Baelz (1849-1913), professor of internal medicine, and Julius Scriba (1848-1905), professor of surgery. Scriba was replaced by Sato Sankichi in 1893, and Baelz terminated his professorship in April 1902.

Mueller's Departure

With the approach of August 1874, the expiration date of their contracts, the Japanese asked Mueller and Hoffmann to continue their work under a new contract with the Ministry of Education. They found this transfer to the Japanese ministry completely unacceptable, however, and made plans to return to Europe. But, in addition to teaching, Mueller and Hoffmann were caring for high ranking officials and the Japanese suddenly realized there were no successors to replace them. They were therefore appointed personal physicians to the *Tennō*, which placed them in an independent position, and they continued to teach.

At the end of 1874 Albrecht Ludwig Agathon Wernick (1843-96) of Königsberg arrived to succeed Hoffmann, and Emil August Wilhelm Schultze (1840-1925) came from Berlin as Mueller's successor. They completed their duties at *Igakujo* by Easter 1875, but continued as physicians to the *Tennō* until 23 November.

On his departure from Japan, Mueller and his wife took five months to return to Berlin, where he was appointed surgeon at a military rehabilitation hospital. During the long passage, he recorded his experiences in Japan, but decided to defer publication for ten years. He did so to avoid disturbing the Japanese, "to whom I am obliged by so much friendliness and manifestations of recognition and love."[43]

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[43] *Ibid*, p. 315.

After a decade his recollections were bright:

> I still remember often and with pleasure those times of hard work, joyful activity and brisk living in Japan, and I hope that I am remembered there in an equally friendly manner.[44]

Advantages of German Medicine

Japan's decision to adopt German medicine was singularly fortuitous. Beyond its position of world preeminence, the system was uniquely suited to Japan. It was the case of a country with the most elaborate and deeply rooted feudalistic culture borrowing from a country with a comparable cultural heritage.

The emphasis on laboratory research was ideal for the Japanese, who find the research laboratory far more comfortable than care of the patient. They dislike developing a close relationship with patients because of the elaborate series of life-long bonds and debts that result from it.

Ambassador von Brandt was correct in his assessment that the leaders should be drawn from the German military. The achievement of military parity with the West was the goal of the architects of the new Japan. Coming to Japan on the heels of Germany's disastrous defeat of the French at Sedan, Mueller and Hoffmann were bound to gain special respect and favor. Further, Mueller represented the happy and somewhat unusual combination of a career military officer who was well-versed in the education process. And, as we know, the German influence is still pronounced in Japanese medical schools today—they continue to prefer it.

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[44] *Ibid.*, p. 459.

LADY OSLER*

GEORGE T. HARRELL

A fascinating personality began to come into focus during my research on William Osler's practice.[1] In 1892, a drastic change occurred in Osler's life style and in his professional career. Two events took place within four months: publication of the textbook which brought him instant international acclaim; and his marriage, that was to last 27 years, to Grace Revere Gross. Which had the greater effect?

Osler's personal life and professional career have been thoroughly documented in Cushing's masterful biography and many other publications by former students and professional colleagues.[2] But little has been written specifically about Grace Revere Osler as a person and her influence on him. The most informative publications were written some years after her death by students who had never known Osler personally.[3] This remarkable, forceful, yet subtle woman devoted her mature life to support of her husband's career in a retiring, self-effacing way. She organized and managed brilliantly the mechanics of day-to-day living in a hectic household, set the stage and implemented the almost impossible task of entertaining unknown guests in unpredictable numbers who would be brought by Osler unannounced to tea or dinner, or even to stay. It is this setting which was remembered by students and others as a large part of the Osler mystique they recalled years later in reminiscences. Only scattered, brief references are found to her just before and after the Osler marriage (her second), and the move from Baltimore to Oxford which was the last major change in direction of Osler's career.

What were her thoughts, especially at these two periods? How did she accomplish all that she did? A search was made for a diary or journal, which many Victorian ladies kept. None was found or is known by family or friends

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* Presented at the meeting of the American Osler Society, Kansas City, Mo., May 9, 1978.

[1] George T. Harrell, "Osler's practice," *Bull Hist Med.*, 1973, *47*· 545-568.

[2] Harvey Cushing, *The Life of Sir William Osler* (London: Oxford University Press, 1940); Earl F. Nation, Charles G. Roland and John P. McGovern, *An Annotated Checklist of Osleriana* (Kent, Ohio: Kent State Univ Press, 1976).

[3] Arnold Muirhead, *Grace Revere Osler, A Brief Memoir* (London: Oxford Univ. Press, 1931; for private circulation); John F. Fulton, "Grace Revere Osler, her influence on men of medicine," *Bull. Hist. Med*, 1949, *23* 341-351, K. J. Franklin, "Grace Revere, Lady Osler," *Brit. Med. J*, 1949, *2*· 47-48.

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to have existed.[4] Personal letters were sought in England, Canada and the States. Some originals remain and most concern social affairs or activities of a superficial personal nature. The greatest number is in the extensive correspondence with Archibald Malloch and his wife, now in the Osler Library at McGill.[5] Unfortunately, the most promising source, letters to her family which she wrote profusely, were destroyed on her instructions after her death.[6] Copies of some letters are in various archives, chiefly at McGill University, and these also have been reviewed. Interviews and correspondence with the few people still alive who knew her personally have supplemented the published and available unpublished material.

Early Years—Boston

Grace Linzee Revere was born June 19, 1854, in her parents' home on the Back Bay in Boston. Her father was descended from French Huguenots who had immigrated in 1723. The family were gold and silversmiths abroad and continued the tradition in this country. The most well-known paternal forebear, Paul the American revolutionary, also was a silversmith who saw the business opportunities in copper and founded the company which still bears the family name. Her mother was descended from Captain John Linzee of the Royal Navy. His ship bombarded Boston during the battle of Bunker Hill, but he stayed on after the war and settled permanently in the new country.

Grace attended private schools, the second from age 10 to 18; this was run by a former student of a Victorian novelist who imbued her with a love of English traditions and culture. A life-long interest in literature and books developed which served her well in both marriages later in life. She began to write and developed such skill as a letter writer that her lengthy description of the great Boston fire of 1872, written when she was 18, was printed 64 years later in the *Boston Evening Transcript.*[7] She remained a prolific letter writer till her death, but no others of this early period are available. Her father was said to be more deeply interested in the literature and records of the Civil War than in the copper business of which he was president. He was generous and spent great personal effort in sympathetic support of friends and public affairs. Her mother trained her in the details of management of the household and developed the trait of helping unfortunate neighbors or others in need. Grace and her mother corresponded regularly until the latter's death at age 85.

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[4] Personal Communications.

[5] I am grateful to Miss M. Fransiszyn, Manuscripts and Reference Librarian, Osler Library, McGill University, Montreal, for invaluable help. Most of the previously unpublished material is from the Library and the Archives of McGill.

[6] Personal Communications

[7] Fulton, *op. cit.* (n. 3 above)

After leaving school, Grace spent winters in Boston with the family and summers at resorts nearby, or visiting family friends in other cities. Though she had formally "come out," she never enjoyed dancing but did attend parties and balls (Figure 1). She is described as tall, about five feet six or seven inches, erect, with a large bust, fair hair, sparkling blue eyes and a lovely pink and white complexion. Her dignity, lack of self-consciousness, fine sense of humor, distaste for sham, enjoyment of ridiculous and incongruous situations, readiness to mimic or take off people, and the use of droll nicknames persisted all her life.

At age 21, while visiting in Philadelphia, she attended a party wearing a pink velvet evening gown. She had not been dancing, but her beauty caught the eye of a surgeon who watched her from every angle. He asked their host to introduce him, talked to her a short time, was hopelessly smitten and determined on the spot to marry her. He met her again the following summer in Bar Harbour, later proposed, and they were married in Boston on December 19, 1876, when she was 22 and he 39. Her family was concerned about the difference in ages, but her determination prevailed.

First Marriage—Philadelphia

Samuel W. Gross, her first husband, was a handsome man of great personal charm. His mother, of English descent, had died earlier, but the son continued to live in the family home. He was the eldest son of eight children. His father was Samuel D. Gross of Pennsylvania-Dutch descent, a preeminent surgeon, author and teacher. A widower, the elder Gross entertained extensively a host of personal and professional friends from this country and abroad. He was delighted with his new daughter-in-law and had her act as his hostess on many occasions. They shared a mutual love of flowers; arranging them was her life-long artistic outlet. The marriage served as a spark to the younger man whose ambition is said to have been lagging. He developed an interest in tumors, wrote his book, and began to publish his best papers. In 1881, her husband and father-in-law took her to London and Oxford, her first visit abroad. When his father resigned the Chair of Surgery at Jefferson in 1882, the son was elected to succeed him. The following year Gross purchased the house at 1112 Walnut Street in which Osler was a frequent visitor. It, with other property, was willed to Grace on his death.[8]

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[8] City of Philadelphia, Register of Wills and Department of Records.

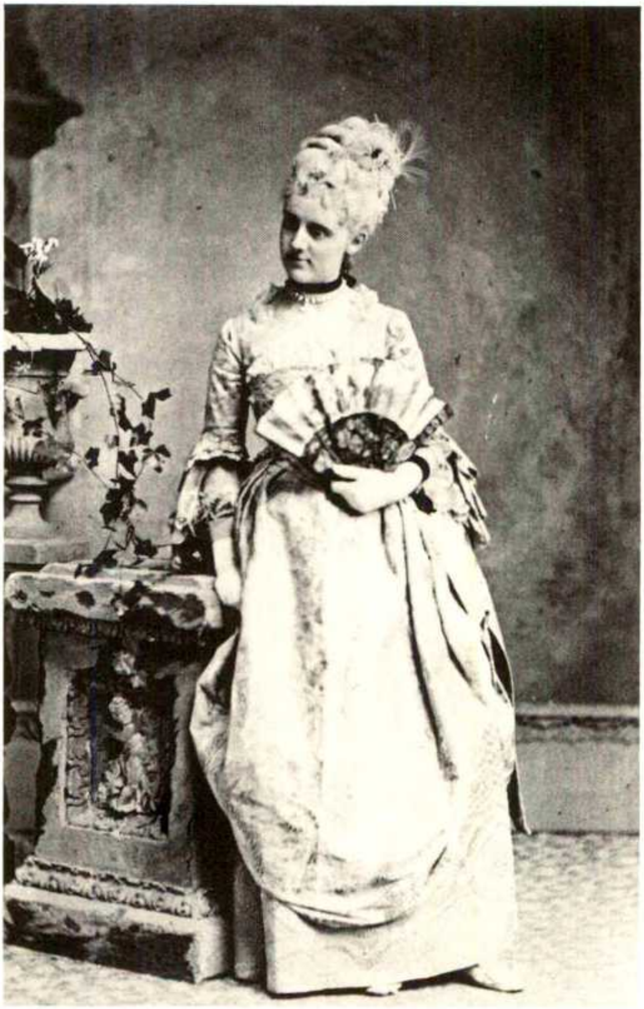

Figure 1. Grace Linzee Revere, age 21, in a brocade "fancy ball dress" borrowed from a cousin and worn at the Centennial Ball, Boston, February 1876. (Courtesy of Miss Margaret Revere, Chestnut Hill, Mass.)

Gross worshipped his wife and the marriage appears to have been extremely happy in spite of the seventeen-year difference in their ages. In addition to the entertaining, Grace served on numerous social, charitable and welfare committees. She continued the practice of helping others as taught by her mother. As we learn from his "Letter from Heaven" of later years, Osler knew there had been a pregnancy which ended in a stillborn child. Grace was visiting the family at 40 Commonwealth Avenue in Boston during the summer of 1879 when she went into labor prematurely.[9] The birth and death records of the city for that year do not contain any mention of the event. The duration of the pregnancy, sex of the child, place of burial, or other details are unknown. None of her letters found mention this episode, nor does the family Bible.

In 1876, the younger Gross had gone in his father's stead to Oxford for a conference where he heard a young Canadian named Osler give what he thought was one of the best papers. He told his father he hoped they might bring the young man to Philadelphia some day. The opportunity came in 1884, the year his father died. The younger Gross helped persuade Osler to leave Montreal and accept the Chair in Medicine at the University of Pennsylvania. A close friendship developed over the next five years and Osler, often dropped by the Gross home in the late afternoon for tea or dinner. In the thirteenth year of their marriage when he was 52, Gross died suddenly April 16, 1889, of a virulent pneumonia. Osler was one of three physicians who attended him. As he was dying, Gross requested that they promise to look after Grace. Osler already had accepted the appointment to the Chair at Johns Hopkins the preceding October and was soon to leave. In his Valedictory Addresses of May 1 to the students and faculty in Philadelphia, Osler praised Gross as a distinguished teacher.

The summer of 1889 "the widow Gross," as Osler jokingly then referred to her, spent with friends on a Canadian island off New Brunswick. Osler was in Toronto, but instead of going to Banff for another meeting as expected went to visit the leper colony at Tracadie, but by way of Eastport, Maine. There Grace and a woman companion, Sarah Woolley, came by boat to meet him. The group traveled several days together en route to the colony. How often on later trips back to Philadelphia for various reasons Osler saw Grace is not known. She continued to live in the house on Walnut Street and arranged for the transfer and support of the Gross library now in the College of Physicians of Philadelphia. That she took the initiative on occasion to keep the relationship active is shown by an 1891 letter of Osler to the librarian saying that Mrs. Gross had asked him to meet her there and that he would come at 5 p.m. to inspect the books and advise her.[10]

The details of their courtship are unknown, since neither confided in anyone and there were no letters found about it from either. No one seems to have suspected a romantic relationship. Osler must have proposed at least once and been rejected, since he was completely immersed in the writing of his textbook and she had told him "to stick to his last." As late as January 10, 1892, Osler was planning a two-months trip to Italy with two former associates and they had booked passage on a steamer to attend a pediatric conference May 30. It was February 29 before he wrote one of them that he was not going. Osler received the first copy of the book February 24. According to Cushing and Muirhead, Grace was visiting friends in Baltimore then. Fulton says Osler took it to Philadelphia the next morning. In any event, everyone agrees he threw the red-bound book in her lap and said: "There, take the darn thing; now what are you going to do with the man?" They reached an agreement, but his family was not notified till late April of the planned marriage. At that time the second companion for the projected Italian trip and the wife of the Hopkins president also were told. All were sworn to secrecy. What Grace told her family, and when, has not been discovered. All of her life she managed to keep dramatic personal events and her feelings largely to herself.

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[9] Personal Communications.

[10] Fred B. Rogers, "Osler and Philadelphia," *Trans. & Studies Coll. Phys. Phila.*, 1970, *38:* 118-123.

On the evening of May 6, Grace carried her empty trunks downstairs, packed them with bright new dresses, and arranged for an expressman to pick them up and take them to the train station early the next morning before the servants, who had not been told of the impending marriage, were up. She was a month short of her thirty-eighth birthday and Osler, who had not had any previously recorded romantic involvement, was two months short of his forty-third.

Second Marriage—Baltimore

The circumstances of the wedding day are indicative of the comfortable, relaxed relationship between the couple over the years. On Saturday May 7, 1892, Osler made early morning hospital rounds in Baltimore, took a train to Philadelphia and arrived at the Gross home in the late morning. He and Grace were sitting in the garden when a professional friend who lived nearby dropped in and invited him to lunch. Osler said he was lunching there, asked their friend to stay and the men talked about Canada. A little before 2 p.m. Grace, who is said to have seemed a little nervous, said she had an engagement, did not know what the others were going to do, but she had a carriage waiting. Osler asked which direction she was going and could she give him a lift. Only then were the servants told she and Osler were to be married at 2:30 p.m. in St. James Church. What she wore or details of the service are not recorded. Apparently, no member of either family attended the ceremony and the assumption is they were alone. They walked to their train and Osler sent their unsuspecting friend a telegram thanking him for coming to "the wedding breakfast." The honeymoon was spent in New York, Toronto, Montreal and Boston, meeting families and friends, and then back to Philadelphia. By May 24, Osler was at work in Baltimore. They looked unsuccessfully for a house to replace the one he was renting on Monument Street. They sailed for England May 28 where Mrs. Osler had her first taste of being left alone while he attended medical meetings. She did not like it and advised other wives not to go or they would sit in a hotel. They took a two-day trip up the river to Oxford. Osler rowed all the way in hot weather even though they had only town clothes with them. They reached Oxford at 10 p.m., took third class wooden seats on the next train and arrived back in London at 2 a.m. They returned to Philadelphia in late August. Osler had learned of a house for sale in Baltimore, went over, looked in the front door of 1 West Franklin Street, said it reminded him of the Gross home on Walnut Street in Philadelphia and bought it on the spot. In September, while he stayed in Baltimore, Mrs. Osler packed her household things. They moved into their home for the next 13 years in October while redecorating still was under way.

A letter dated November 11, 1892, from Osler to a colleague about professional things, in passing says: "I did not care to leave madam (who has by the way a young Professor under contract)." This note is the first announcement found of a pregnancy. He wrote his family January 24 of a "coming event." The child, Paul Revere, was delivered at home by Howard Kelly on February 6, 1893. The birth certificate lists it as the mother's first child. The following day Osler wrote his family that mother and boy were fine. He wrote a professional colleague on February 11 that the "young doctor looked very touchy," but was fine and strong though jaundiced. On February 18, he wrote another friend that the birth was exceedingly easy, though the boy was a little asphyxiated. For five or six days the child was fine, but about the seventh day went into a sudden coma and died. Osler thought there might have been a meningeal hemorrhage and that is the cause listed on the death certificate by John Hewetson, a physician at the Hopkins. The infant was buried in Greenmount Cemetery in Baltimore.[11] A letter in March says Mrs. Osler was not very strong and did not wish to make a train trip. By May, though, she was arranging to go to Chicago for a week. In a letter to a friend, Osler expresses great disappointment in the death of the boy, but says that his wife is alright. No letters of hers about this pregnancy were found.

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[11] City of Baltimore, birth and death records.

On July 1 while visiting friends in Wilkes-Barre, Pennsylvania, Osler wrote by hand a long very touching letter addressed to Mother, signed Paul Revere, and "postmarked" Heaven. It was left at night on her dressing table. In the letter, Osler refers to a cap intended for the child stillborn of the Gross pregnancy but kept by Grace. He calls the infant "Julius Caesar." He clearly was attempting to cheer his wife up in a mixture of pathos and humor.

During the next several years, the succession of relatives, friends and colleagues who visited the Oslers began. The cabbies at the railroad station knew that the "fur hats" getting off the trains were Canadians and the "square hats" Bostonians, most of whom were going to Dr. Osler's on West Franklin Street. Morris, the butler, and Margaret, the maid, who had been trained by Grace, were brought from Philadelphia to help. The staff of black servants grew to five by 1904. The hospital had been in operation since 1889 with house officers to teach and patients to see both there and in the consulting room in his home. The first class of medical students entered when the school finally opened in the fall of 1893. Up to this time, "The Chief" apparently had done little entertaining. The regular "at homes" in the afternoons now began, and the Saturday night dinners for two students followed by the larger informal sessions around a table with Osler's beloved books. These occasions with beer, pretzels or sandwiches, served by Mrs. Osler, impressed students greatly. She did all the marketing for the household herself, carrying a large basket that she alone used. She arranged dinner parties and wrote by hand the invitations, often as many as 30. On many of the social occasions, Osler would participate in the conversations after tea or dinner for five to ten minutes and then excuse himself to work while Grace was left to entertain the guests.

About this time, they began selecting a few young colleagues as "latchkeyers" who were given front door keys so that they might come at any time to use the library or certain other rooms. In 1894, the first letterheads appeared with the address of an office, 1 W. Franklin St. and Consultation Hours 3-5 p.m. The Oslers spent the summer of that year in England and made their first extended visit to Oxford together (Figure 2). Grace was visiting in Boston in January 1895 when word leaked of the approach by McGill University to Osler to become Principal. The household was upset and the servants in tears. Osler declined, but Grace's position on the possible move, one of many offers, is unknown.

A letter by Osler to a colleague dated September 28, 1895, mentions that in June Mrs. Osler had an "ugly attack" of local peritonitis. The exact cause is not known. Several letters in July mention that she had been ill and had a

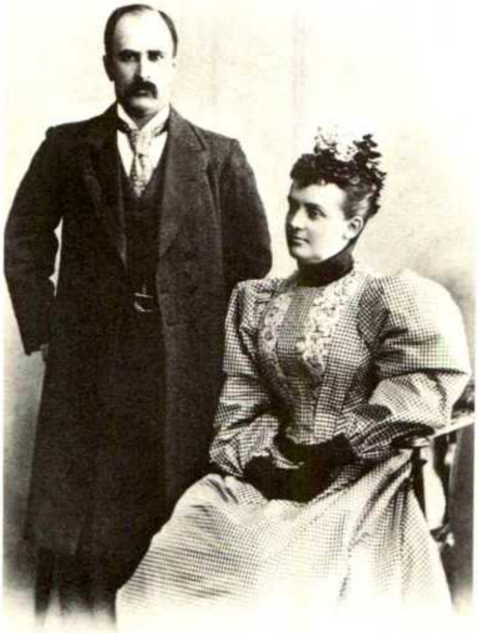

Figure 2. Grace and William Osler, Oxford, probably summer 1894. (From the Osler Library Collection, Montreal.)

nurse. The September letter for the first time mentions the second Osler pregnancy and that "she expects in January. We hope for better luck." By December 26 he wrote that Mrs. Osler was well and they had spent a very quiet Christmas. On December 28, Edward Revere was born at home. He had the blue eyes and fair hair of Grace, rather than the swarthy complexion of Osler. The baby weighed seven pounds and Osler wrote: "This one looks durable." Grace was 42 and Osler 46, so it seems reasonable they recognized that Revere would be their only child. The boy was the joy of his parents' life and they showered affection on him. A black "mammy" and later English and Scotch governesses were obtained to help care for him.

Grace Osler continued a heavy schedule of entertaining and became involved in community activities. She especially was interested in nurses and on occasion would go to the hospital to mollify one when a practical joke of Osler's would misfire. She would have tea at six in the morning and by breakfast at eight would have answered 15 to 20 letters. Her letters—or copies—dated after 1895 are the only ones found in appreciable numbers.

Many were brief notes, but others caught up on old correspondence and supplemented Osler's short replies. Hers contained more details of the family life and her impressions on their travels. Osler was deeply involved in professional writing, teaching and patient care. He wrote that a doctor needs a wife to look after his house and rear his children. He advised keeping to himself a doctor's outside affairs relating to practice. The circumstantial evidence is that Grace exerted a quiet, significant influence, especially since his office consultations were done in the home. He had written of her at their marriage: "She is an old friend of mine. I feel very safe." He wrote that a wife would recognize that responsibilities of the doctor to her and the children are outweighed by those to him, his profession and the public. Grace Revere Osler certainly accepted that philosophy and lived her life by it. She wrote to an old colleague of Osler's that she was pleased he found his old friend "unchanged by marriage."

Up to this time, Osler had indicated in letters that he expected to retire to Montreal. He never became a naturalized American citizen. The family began to spend more summers abroad, particularly in England which they all loved. The strain of his work was beginning to tell and he began to talk of retiring at age 60 to England where he had British citizenship because of his Canadian birth. They had already decided that Revere should receive his final education there. The first hint that others hoped he might come to Oxford is in a 1904 New Year's Day letter to Osler from a British friend. By June he had been formally nominated to succeed the retiring Regius Professor of Medicine. Grace was elated at the prospect since she feared he would kill himself if he continued his present pace. In July, Osler went to Oxford alone to give a paper and receive a Doctor of Science degree. He wrote Grace that he had difficulty coming to a decision. She immediately cabled: "Do not procrastinate accept at once." The official letter of appointment from the Prime Minister was received August 4, the day before Osler sailed for home, and he accepted. He wrote many letters on the boat announcing his decision. The months before their departure from Baltimore were filled with a series of meetings, testimonial dinners, speeches, lectures, as well as a revision of the textbook. By May 17, 1905, he had completed the new edition. Grace wrote she was "inflated with pride" by the tributes to him and "sunned myself in my husband's glory." She was left alone with the task of organizing the packing and shipping of the household effects and Osler's books, which she did herself, before the May 19 sailing. He had departed three days earlier with only a handbag to meet her at the pier. She remarked: "Willie's motto may well be Aequinimitas because he always flies when things like this are going on." She was one month short of her fifty-first birthday and Osler was two months short of his fifty-sixth. Revere was nine.

Later Years—Oxford

The move to Oxford ushered in what may have been the happiest years of the Oslers' married life and undoubtedly the time of their greatest tragedy. Both, but especially Grace, saw the new appointment as an opportunity to reduce the demands of teaching and practice, to savor the fruits of Osler's international fame, and particularly to enjoy a more leisurely family life together as the boy grew up (Figure 3). Osler felt the move would be a financial hardship since his stipend from the Chair was low, but they agreed that her private income of $5,000 yearly, which came entirely from the Gross estate, would be enough for them to live on quietly.[12] Grace had retained the properties in Philadelphia and rented the house on Walnut Street until its sale in January 1906.[13] In fact, they never were financially pressed, since the consultations came quickly and were lucrative.[14]

The Oslers rented a furnished house at 7 Norham Gardens and moved in, exhausted, on May 27, 1905. They immediately began to enjoy the beautiful English summer and the much wider and different university contacts. Many more of Grace's letters remain from this period than from any other. She told of the pagentry of the University, the dinners in the College with its old silver, the Cathedral and its sunlit windows, the flowers, the birds, the house, the servants, and the cold weather. She received the first mail at 6:30 a.m. and by 8 a.m. had read and answered it, writing at a table in her bedroom. The letters usually ended "cordially" or "very cordially." She wrote every one to three days to her mother, less often to her sister. These long letters, ending "affectionately," might be started in the long quiet period she loved between tea and dinner, or after the meal, and be left unfinished when she no longer could stay awake. Osler told her these letters should be saved. Some were until her death and Cushing was able to make typed copies. A few of her illustrative drawings have survived. The couple was surprised to learn that the Regius also was Master of Ewelme, a 500-year-old almshouse nearby. They spent many happy hours there restoring the old records and using the house as a retreat.

From the beginning, there were innumerable ceremonies, luncheons, din-

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[12] Edward H. Bensley and Donald G. Bates, "Sir William Osler's autobiographical notes," *Bull. Hist. Med.*, 1976, *50:* 596-618.

[13] City of Philadelphia, Register of Wills and Department of Records.

[14] Harrell, *op. cit.* (n. 1 above).

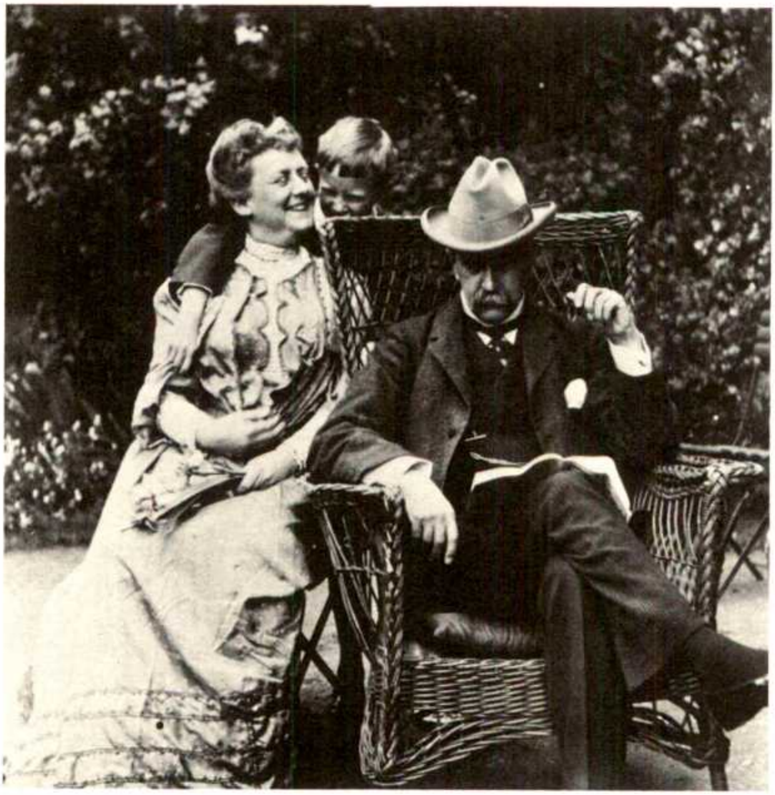

Figure 3. Grace, Revere and William Osler on the terrace at 7 Norham Gardens, Oxford, June 1905. (From the Osler Library Collection, Montreal.)

ners, boat races, garden parties, weddings and receptions. By the end of June, she was entertaining college officials and trying to decide how to return 113 visits and respond to invitations to dinner which arrived in every mail. Quickly, family from Canada, friends from Baltimore and professional colleagues from everywhere were arriving to stay in the house. The servants had been accustomed to a small household and demanded more pay for the increased work since they now had "better keep all the beds always ready in this house." The couple searched for a house of their own and found it nearby at 13 Norham Gardens. Much reconstruction was needed and it was late January 1907 before they could move in. Amusing anecdotes are recorded of Mrs. Osler trying out the bathtubs for size and dealing with plumbing, painting, plastering and papering tradesmen. The house became an Oxford institution and promptly was known as "The Open Arms" by hundreds of Rhodes scholars, other students, physicians, scientists, relatives, personal visitors, and friends of friends who came with letters of introduction. As many as 50 would come for tea on Sunday afternoons beginning at 3:30. Sunday dinner at 8:30 after evening church was informal, buffet style with a chafing dish on the table. She never knew how many would come or be brought for dinner on other days. She would have as many as 84 guests for three formal dinners in a week. The servants were very capable, especially those who came with the rented house. Grace no longer did the marketing, but would meet the cook in the kitchen at 9:30 in the morning and go over the list of food suggested for the day. Initially they had the use of horses and a carriage, the first time they ever had had personal transportation. Osler was being taken around by motor car, enjoyed the experience and insisted on being driven fast. Grace wrote she was "scared half to death," but by July 1908 they had ordered their first car. Chauffeurs were a problem over the years, as were the frequent breakdowns. One American student, Wilburt Davison, she dubbed "Jonah" because he seemed to be along when they occurred.

Servants liked Mrs. Osler who demanded good service and paid them well. But they became much more of a problem with the war. A particularly amusing letter of November 13, 1915, describes a fire which destroyed the dining room. Grace awoke at 3:30 a.m., smelled smoke and called the fire brigade. She sent Revere to call the servants who took 20 minutes to respond and then appeared fully dressed, some with hats on. One girl, with gloves in hand, she "shook out of her fur and veil." Another was "beneath contempt and I have not spoken to" him. The firemen arrived after 25 minutes with, "Good evening, you have a fire?" Osler and Revere, with wet towels over their mouths, got several shelves of books and manuscripts out before they had to stop. The fire was quickly contained. As soon as Osler found the books were safe, he went back to bed. Mrs. Osler gave the firemen a meal. The next morning Osler and Revere went off to town as if nothing had happened. He suggested leaving "the woman with push and go" the task of cleaning up and putting the books back, which required several weeks. Mrs. Osler never forgot the old servants in Baltimore and often sent them money. She interceded with the trustees at Hopkins on behalf of employees who had worked with her husband and whom she felt were not being treated fairly.

Students would drop by, often six men per week, to ask advice on what to wear or to talk about. She spoke about warm underwear, pajamas with feet, socks, mufflers and suggested they temporarily forget America, enjoy Oxford, and act like the English while there. The tennis court was much used. She wrote she must always have a girl around, since it made the house so attractive to men. She arranged to do so by including women students in invitations and later, during the war, nurses from hospital units. One Canadian student still vividly recalls her association over several years.[15] Mrs. Osler did not treat these girls as surrogate daughters, but some relationships became close. In the list of gifts attached to but not part of her will, she left two rings, one of which was the engagement ring given by her first husband. It had been redone by Osler with the addition of two diamonds. The other had belonged to her grandmother. The sapphire and diamond ring was given to Sarah Woolley, her long-time friend and companion. A large ring of five diamonds in a band, was given to a Canadian girl, a friend of Revere's, who continued to visit in the home after his death. Grace had dresses made, including the first long one for a girl Revere was to take to a party. With others she was pleased to note "as we walked home in our short foulards we were looked at well." When she was presented at Court in May 1911, she went with two girls who described her wearing the dress with a train as if she were the owner of the palace who had asked the king and queen to stay a few days (Figure 4). Grace felt the royal couple looked bored, but said she "strutted like a peacock." On June 19 that year Osler was made a baronet and she became Lady Osler.

As Revere grew up, he was placed in several private schools, but matured slowly. He liked stamps, butterflies, cricket, etching, cabinetmaking, but above all fishing. Occasionally he would go with his father, as early as 6 a.m. Family vacations often revolved around opportunities for trout, salmon or pike. One letter of Lady Osler's mentions that she had gone with her son, but without luck. On the bookplate he designed, Revere refers to himself as a disciple of Isaac Walton and Osler often referred to the boy as Isaac Walton, Jr., Isaac, or Ike, among other nicknames. Revere was not interested in medicine as a career, but did develop a late interest in old books such as his father's.

On July 31, 1914, Lady Osler and Revere sailed for Canada to meet the boy's uncles. Sir William was to follow, but war broke out. She and the boy returned on the same ship which had stayed in port to be painted black. She found her husband "quite different from what I had ever seen him." Both had premonitions from the beginning that the war would bring tragedy. Though she was 60, she immediately plunged into war work organizing, as president of the Needlework Guild, 50 to 100 Oxford ladies for sewing with 11 machines she bought. Long letters to her sister describe many details of

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[15] Personal Communications.

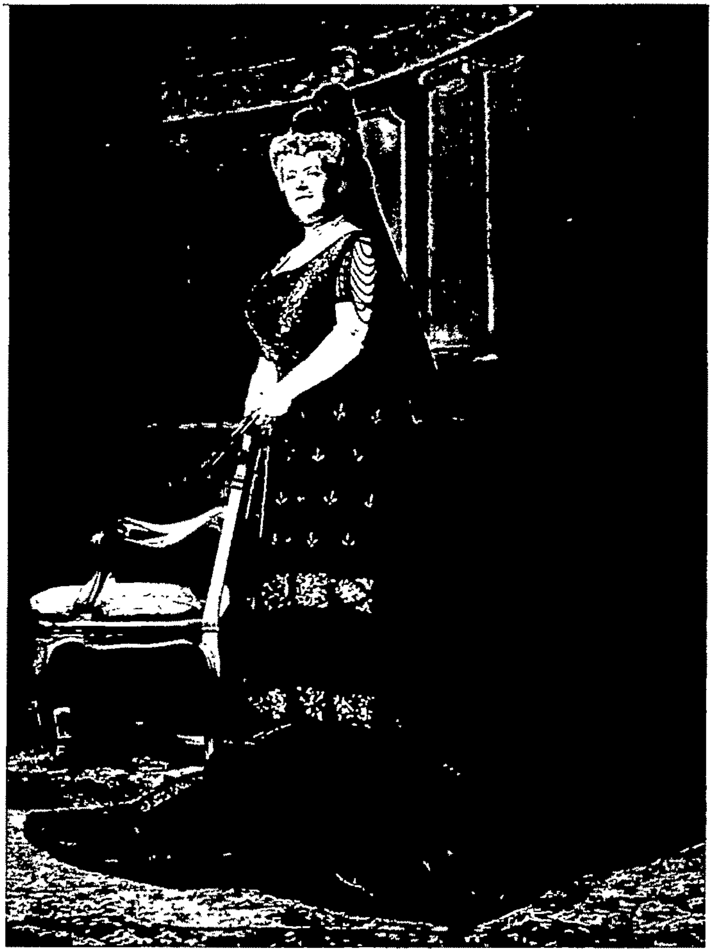

Figure 4. Grace Revere Osler in the dress for presentation at Court, May 1911. (From the Medical and Chirurgical Faculty of the State of Maryland Library, Baltimore.)

the radical adjustment in their lives and how furious she was at being a woman and so old. She wrote that the loyalty of gentlemen turning over their superb cars "makes one squirm and weep." By November she was organizing the housing and care of a group of 80, including 15 professors, who had escaped from Louvain, Belgium. She found them unrefined with enormous appetites and not dainty like the French. She converted two rooms of her home into a clearing station for clothes, food and other necessities. She begged for funds through letters to the editor of the *Times,* the trustees of the Rockefeller Foundation, other organizations and personal friends. She gave no Christmas presents to family that year to keep the money for the refugees' gifts and support.

Lady Osler's greatest concern now was as a mother to Revere who was conscience stricken and felt he should volunteer. He was 18, had failed his first entrance examination for Oxford, took it again and was admitted to Christ Church College. A girl who knew him then describes him as shy and artistic.[16] His father and the family in Canada insisted he should stay in school as long as possible. The boy entered officers' training, which often was in a park "under our own eyes except I can't look," as his mother wrote. Revere could not talk with his father about the war, but on his 19th birthday unburdened himself to his mother who wrote: "I shall do my utmost to hold out and have a cheerful face for my dear unselfish angel who is breaking his heart over giving up his boy to this awful risk." She felt "work was her only salvation" and found she "liked wounds and hospitals more than any untrained person there." Revere tried several branches of the service, including a short stint in a Canadian medical unit, but ended up a lieutenant in the British artillery (Figure 5). Grace felt "numb," since life was so unnatural and it was "pathetic to see Willie pretending."

The war increased the demands on The Open Arms with both Canadian and American hospital and combat units nearby. Wounded were coming by the trainload. Wilder Penfield, a student who suffered a broken leg when his ship was torpedoed, stayed with the Oslers for weeks. Grace's sister Susan came as a secretary to Osler but in her mind most importantly as a "playmate" for him. Lady Osler had transferred money of her own to America and paid for the passage. She wrote: "I am a fool and might have more time on my hands and be a real lady, if I did not run holes in my shoes trying to do something for someone else." She wrote of Zeppelins which passed over Oxford at 12,000 feet. She would go out to look while Osler stayed in bed.

On August 29, 1917, a direct hit on his battery fatally wounded Revere and he was buried at Poperinghe in Flanders. The death crushed them both. She wrote: "I always expected this, but I could never be ready." Osler grieved, sobbed in bed at night, did not eat, and lost nearly 30 pounds. She tried to shield him and lamented: "It is hard and we are getting old." In another letter she wrote: "My darling fair baby has gone. My poor man is heartbroken." Her sister wrote that Sir William was shrinking away and Grace's face was sad beyond words. Osler told his wife he had nothing to live for and all joy was gone. Both, though, worked harder than ever. In July 1919, Sir

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[16] *Ibid*

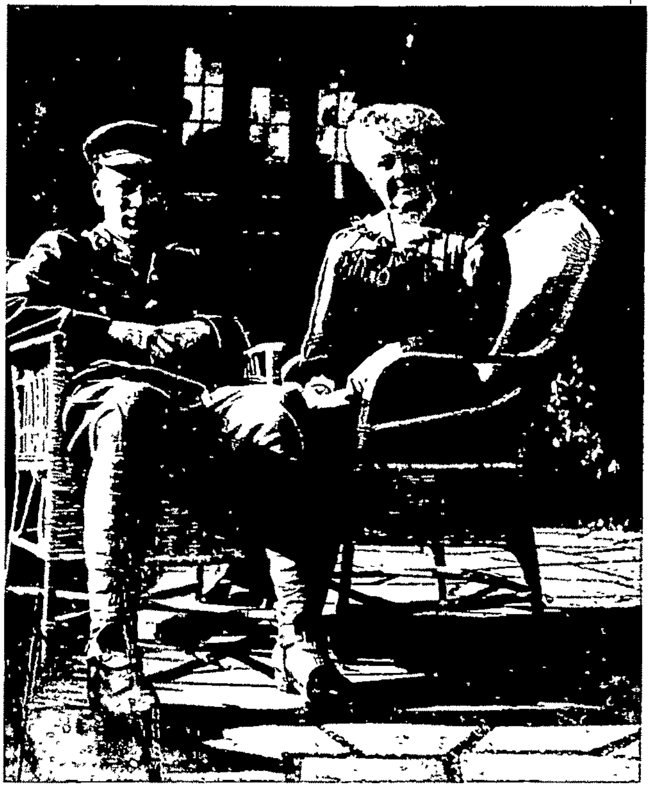

Figure 5. Lady Osler and Revere, on the terrace at 13 Norham Gardens, Oxford, probably 1917. (Courtesy of Miss Margaret Revere, Chestnut Hill, Mass.)

William contracted pneumonia which dragged on. An empyema developed which required surgical drainage. On December 29, at age 70, he died from a sudden hemorrhage in the wound. She wrote his brother January 1, 1920: "I am so weary and stunned, alone in the world and my two dear ones are gone." She went on to describe the funeral at which she felt "the proudest of women." She was 65.

The tradition of The Open Arms, including the latch-keyers, never lessened and the continuing stream of young people in the house undoubtedly kept her going.[17] Visitors were coming from abroad to see the house and the books. Lady Osler was appointed to the Committee of Management of the Radcliff Infirmary (Figure 6) and she became the first woman trustee ever of

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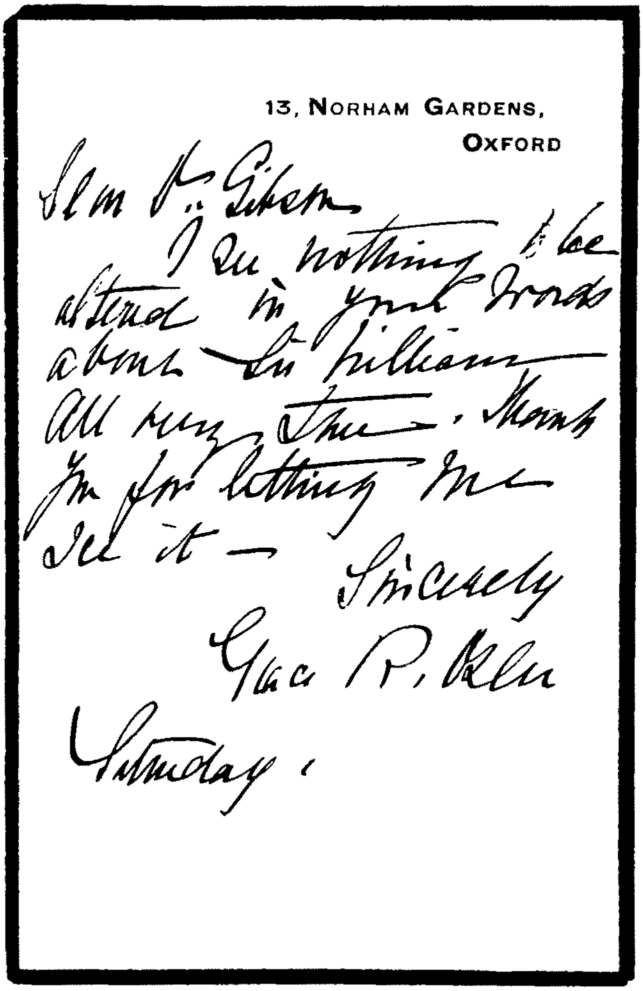
[17] Marshall N. Fulton, "Sir William Osler's better half," *Harvard Med. Alumni Bull.*, 1977, *52*. 27-29. This paper originally was entitled "On being a latchkeyer at 13 Norham Gardens, Oxford 1920-23" when it was presented on May 11, 1977, at the American Osler Society, Rochester, Minn.



13, NORHAM GARDENS,
OXFORD

Dear Dr. Gibson—
I see nothing to be altered in your words about Sir William—
All very true. Thank you for letting me see it—
Sincerely
Grace R. Osler

Saturday.

Figure 6. Letter to Dr. Alexander George Gibson in reply to his request for a review of what he wrote about Osler for *The Radcliffe Infirmary*, Oxford University Press, 1926. (Courtesy of the Osler Library, Montreal.)

Ewelme, serving both till her death. She would visit Revere's grave in Belgium, near the French border, once or twice a year. She gave freely of time, energy and money to charities and to organizations which perpetuated her husband's memory and that of their son. She kept up her correspondence with old students and was "always yearning for my old pets." She selected Harvey Cushing to be Sir William's official biographer and helped in the collection of material for him.

She took over the unfinished task of supervising the organization of the library which had occupied so much of Sir William's time in his last years.

The hundreds of letters to Malloch are a rich source of her feelings about the war and various people who worked with the books. After Revere's death, the tone becomes less bouyant and cheerful. She becomes more outspoken about the burden of entertaining. She found it no easy matter to supervise the food even though Sir William said it was no trouble. She wrote almost daily about his final illness, telling "Archie," "I feel you are more than half my boy." She felt she would never see the work finished and became increasingly impatient at the slow progress. The letters of the latter years refer more to tragedy, depression, infirmities, the strain and emotional upheaval of having the librarian selected by Osler to organize the book collection, his wife and child living in the house. The young wife "belongs to different worlds," and goes to the kitchen where "it is really not customary in our class of life for ladies to be jabbering with maids all the time." The preparation of the catalogue of the books took in all seven years, far longer than anticipated, but she persisted in seeing it through. It was not completed at her death, but she had seen some final proofs and it was dedicated to her posthumously. Another earlier work dedicated to her was a collection of Osler's early writings published by a former student in 1905, with a second edition in 1921.[18]

On December 22, 1927, she had a slight stroke and it was March of 1928 before she was back to much activity. Although she knew that her systolic blood pressure had been as high as 200, she wrote: "I have never been ill in my life and I am not enduring it very patiently." She had always ignored or played down her prior illnesses. She had a fear of not completing the filling in of gaps in the library, but it proved groundless. The last letter found, dated August 18, 1928, says "I only wish I had died last January. I am so useless." On August 10, the day after the eleventh anniversary of Revere's death, the first boxes arrived in which the books were to be packed for shipment to McGill. On August 31, she awoke with a severe headache. At breakfast, she asked for her sister and a former latch-keyer staying in the house to come upstairs. She had signs of a massive left hemiplegia, and her pulse suddenly stopped. She was 74. Her funeral was held in Christ Church Cathedral, as her husband's had been, and her ashes were placed, with his, in the Osler Library in Montreal. Her will left £5000 to establish a lectureship at Jefferson Medical College of Philadelphia in memory of her first husband, and The Open Arms to Oxford University as a home for succeeding Regius Professors in honor of her second.

She was truly a great lady.

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[18] Earl F. Nation, "The influence of Osler on his students: the Osler-Camac correspondence concerning counsels and ideals from the writings of William Osler," *J A.M.A* , 1969, *210*: 2226-2232.

TEXTS AND DOCUMENTS

AN UNKNOWN LETTER OF JACQUES DALÉCHAMPS TO JEAN FERNEL: LOCAL AUTONOMY *VERSUS* CENTRALIZED GOVERNMENT*

JAMES J. BONO AND CHARLES B. SCHMITT

The often heated rivalry between physicians and apothecaries enlivens the study of the history of medicine in early modern Europe. Often it may serve as an index to the practical concerns, therapeutic procedures and theoretical commitments of past practitioners. By bringing to the forefront such issues as licensing, corporate structure and privileges, and the role of university medical faculties and professional medical organizations, physician-apothecary disputes have, in addition, focused the attention of historians upon the impact of medical institutions and social arrangements on medicine and health-care at large. The Latin text to which this article serves as an introduction deals with one instance of physician-apothecary tensions in sixteenth-century France. While offering fresh testimony to the importance of such institutional and social factors in early modern Europe, our text also reveals something of the concrete political and legal contexts that nourished and exacerbated this particular inter-professional dispute. As we shall see, moreover, the rhetoric adopted in this dispute assumed symbolic importance as it was swept up in the intellectual turmoil surrounding legal-administrative reform and the conflict between the privileges of local autonomy and the encroachments of centralized government in sixteenth-century France. First, however, let us turn to the text itself, to an examination of its author and audience, and to a reconstruction of the circumstances surrounding its composition.

Among physicians of the first rank in sixteenth-century France, few enjoyed more noteworthy careers, or greater fame, than Jean Fernel[1] (1497-

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* The research reported in this paper was accomplished, in part, while Mr Bono was a Macy Fellow in the History of Medicine and the Biological Sciences and the recipient of a National Science Foundation Doctoral Dissertation Research Grant. Dr. Schmitt's research on Daléchamps was supported by United States Public Health Service Grant MH 11,808 and by the Wellcome Trust. In addition, the authors would like to thank Professor Robert Brophy of the Department of Classics, University of Georgia, for reviewing our text and translation of the Daléchamps-Fernel letter

[1] The major work on Fernel remains Sir Charles Sherrington, *The Endeavour of Jean Fernel*, (Cambridge:

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1558) and Jacques Daléchamps (1513-1588).[2] Each contributed to the vigorous medical and cultural life of their chosen cities, Fernel at Paris, Daléchamps at Lyon. Moreover, their reputations as men of great learning and medical expertise attracted considerable attention, winning for their names international recognition and acclaim, and for their works a substantial European audience.[3] It is all the more noteworthy then that evidence of professional contact between the two French physicians, hitherto unknown, has recently come to light.

The evidence, a letter here edited and translated for the first time,[4] is derived from a manuscript collection of Daléchamps' correspondence known to a few earlier authors and bibliographers, but left unstudied and apparently forgotten until its contents and potential significance were recently noted. While it remains yet insufficiently studied, this correspondence suggests to us by its scope a Daléchamps actively cultivating a circle of intellectuals, humanists and scientists international in origin and repute, and catholic in its pursuit of knowledge.[5] Fernel, by contrast, seems not to have crowned his fame and importance during the sixteenth century with a fit-

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University Press, 1946). In addition, see: Léon Figard, *Un médecine philosophe au XVIe siècle: Étude sur la psychologie de Jean Fernel* (Paris, 1903; repr., Geneva. Slatkine Reprints, 1970); Jean Goulin, *Memoires littéraires, critiques, philologiques, biographiques et bibliographiques pour servir à l'histoire ancienne et moderne de la Médecine* (Paris, 1775), pp. 286-413; Alexander Rittmann, "Fernels vermittelnde Reformbestrebungen" in his: *Culturgeschichtliche Abhandlungen uber die Reformation der Heilkunst,* Heft III (Brunn, 1870), pp. 85-223; Jacques Roger, "Jean Fernel et les problèmes de la médecine de la renaissance" (Alençon, Orne: Imp. Alençonnaise, 1960) (*Conférences du Palais de la Découverte,* série D, no. 70, Histoire des sciences). The fullest biographical source is the *Vita Fernelii* written by his disciple Guillaume Plancy (Plantius), but apparently not printed until 1607 in a Frankfort edition of Fernel's *Universa medicina.* For further bibliographical information, and for translations from Plancy's *Vita,* see Sherrington and Goulin.

[2] On Daléchamps see the following publications by C. B. Schmitt which also contain references to additional literature. "Some notes on Jacobus Dalechampius and his translation of Theophrastus (Manuscript: BN lat 11,857)," *Gesnerus,* 1969, *26* 36-53; "Theophrastus," in *Catalogus translationum et commentariorum* (Washington, 1960f.), II (1971): 239-322, esp. 257-8 and *passim;* s v in *Dictionary of Scientific Biography* III (1971): 533-4; and "The correspondence of Jacques Daléchamps (1513-1588)," *Viator,* 1977, *8:* 399-434.

[3] Fernel wrote a number of important medical/philosophical works that were reprinted often throughout Europe in the 16th and 17th centuries. These works included: *De naturali parte medicinae* (Paris. Simon de Colines, 1542)—later becoming the *Physiologia* of his *Medicina; De abditis rerum causis* (Paris: C. Wechel, 1548); *Medicina* (Paris: Andreas Wechel, 1554); *Universa medicina* (Paris: Andreas Wechel, 1567). The latter work (which includes the *Physiologia* and *De abditis rerum causis* in addition to Fernel's *Pathologia* and *Therapeutice*) was seen through the press by Plancy and was especially popular. For the diffusion of Fernel's works see, "List of Editions of the Writings of Jean Fernel" in Sherrington, *op. cit* (n. 1 above), pp. 187-207. For Daléchamps' publications and correspondence, see the publications referred to in the previous note.

[4] Paris, Bibliotheque nationale, lat. 13,063, fols. 13-14 On this ms. see Schmitt (n. 2 above), "Some notes," 36, and "The correspondence "

[5] The range of Daléchamps' contacts is indicated in Schmitt (n. 2 above), "The correspondence "

tingly international correspondence. His literary activity sought expression in lengthy treatises and compendious tomes—widely disseminated through numerous editions—directly related to his chief medico-philosophical interests. In sum, Fernel's failure (with the possible exception of a few dedicatory epistles)[6] to cultivate epistolary excellence serves to mark him off from the chief activities and duties of the early modern *respublica literaria*. Fernel's endeavour seems not to have included the fostering of humanistic and scientific learning through the agency of an international network of correspondents. Rather, whether attributable to some eccentricity of character[7] or to intellectual allegiances that did not demand a social restructuring of knowledge as prerequisite to reformation of the arts and sciences, Jean Fernel sought to restore and reformulate the scientific-philosophical basis of physiology and medicine through individual effort and exegesis. He was aided in this pursuit by prodigious medico-philosophical erudition and not inconsiderable practical skills. In the end, Fernel produced a number of outstanding medical works which for a century were renowned in Europe as standard texts: but he bequeathed to us no significant correspondence.

Though biographical accounts have reported sharply conflicting statements about the date of his birth, the most reliable evidence suggests that Jean Fernel was born at Montdidier in 1497.[8] His father, an innkeeper, moved the family to Clermont, near Paris, while Fernel was still a boy. After his initial training at Clermont, Fernel went to Paris where he enrolled in the Collège de Ste. Barbe at the University of Paris.[9] After approximately two years at Ste. Barbe Fernel became a master of arts, most likely in 1519. In the years following, Fernel undertook intensive study of Cicero, Aristotle and Plato, and actively pursued interests in mathematics and "humanistic" subjects. Later, he returned to Ste. Barbe where he taught philosophy and published works on mathematics and cosmography,[10] while studying for the M.D. degree which he received from the Parisian medical faculty in 1530. Fernel's medical career was intimately associated with Paris and the University's faculty of medicine, where he became a preeminent and influential figure. Fernel's medical-philosophical works begin with the *De naturali parte medicinae* of 1542 and the *De abditis rerum causis* published at Paris in 1548. But it was the *Medicina* of 1554 that crowned his career and established Fernel as the greatest physician of sixteenth-century France.[11]

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[6] See, for example, the dedicatory epistle's of Fernel's *Monalosphaerium* (Paris: Simon de Colines, 1526 [1527]), to Jacques de Gouvea; *Cosmotheoria* (Paris: Simon de Colines, 1527 [1528]), to King John III of Portugal; *De proportionibus libri duo* (Paris: Simon de Colines, 1528), to Martin Dolet; *De naturali parte medicinae* (1542) to the Dauphin (later Henri II); and the dedicatory letters to King Henri II prefacing the *De abditis rerum causis* (1548) and the *Medicina* of 1554.

[7] The portrait drawn of Fernel by Plancy, *op. cit.* (n. 1 above), is of a deeply learned and private man, "habitually preoccupied with his own thoughts, . . . rather sad and taciturn," a scholar whose daily regimen included pouring over the texts of ancient masters and whose pursuit of truth in medicine indeed led to the composition of a philosophical dialogue (*De abditis rerum causis*) in an attempt to unravel "statements which remain obscure and equivocal" in the works "of the ancient philosophers and physicians " See Sherrington's translations, *op. cit.* (n. 1 above), pp. 170,161 and 168-9 However partial or biased Plancy's "Life" of Fernel may be, Fernel's own works—his *De naturali parte medicinae* as well as the philosophical "Dialogues"—seem to rely upon a multi-layered exegesis of problematic ancient texts as a method of discovering true scientific knowledge (*scientia*). Knowledge, then, for Fernel would appear to rest more in individual effort and *insight*, than in the merely quantitatively more extensive *sight* of cooperative networks of researchers A more extensive discussion of these points, and Fernel's "methods" in general, will be contained in James J. Bono's doctoral dissertation, "Jean Fernel (1497-1558) and the Concept of *Spiritus* in Pre-Harveian Physiology," Harvard University (in progress).

[8] The printed version of Plancy's *Vita* states that Fernel was 72 years of age when he died, hence placing his birth in 1485/6. However, Plancy's accuracy has been challenged, and it is possible that the ms. from which the printed edition was drawn was defective. In any case, the ms. used was not an autograph copy. Other early biographical notices provide conflicting reports, some claiming that Fernel died at age 52, not 72. Goulin, Figard and Sherrington accept 1497 as the date of Fernel's birth. For citation of relevant testimony and source materials see Goulin, *op cit* (n. 1 above), and Figard, *op cit* (n. 1 above).

Most of Daléchamps' career, his medical activities, and his publications are closely tied to Lyon, where he spent the latter half of his long life.[12] Daléchamps was born in 1513 at Caen in Normandy and studied at the University of Montpellier under the eminent Guillaume Rondelet, taking a doctorate in medicine in 1547. After several years at Grenoble and Valence, he settled in Lyon where he spent the remainder of his life. He rose to a place of great eminence in the city as *médecin de l'Hôtel-Dieu,* a position he obtained upon his arrival in Lyon. He published numerous works on various medical subjects, a very large botanical work, edited classical texts, translated several works of Galen and Hippocrates into French and Athenaeus into Latin. In addition he left behind various manuscript works, including a Latin translation of Theophrastus' extant works and a substantial correspondence. The latter indicates that he was in contact with many medical, scientific and literary people throughout Europe. Included in the collection of letters to and from him, which numbers nearly 400, is the letter addressed to Jean Fernel, which is of principal concern to us here.

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[9] In addition to the literature cited in note 1 above, see J. E. J. Quicherat, *Histoire de Sainte-Barbe Collège, Communauté, Institution*, t.1 (Paris, 1860)

[10] On Fernel's teaching and mathematical studies, see Quicherat, chapters 18 ("Déroute de la scolastique-Gelida-Postel-Fernel") and 19 ("Cours de mathématiques de Jean Fernel—Mesure d'un degré du meridien"). The pertinent works are the *Monalosphaerium*, the *Cosmotheoria*, and the *De proportionibus* (see n. 6 above). More generally on Fernel and mathematics see: François de Dainville, *La géographie des humanistes* (Les Jésuits et l'éducation de la société Française) (Paris: Beauchesne et ses fils, 1940), pp 11-16, Georges Maupin, *Opinions et curiosités touchant la mathématique d'après les ouvrages Français des XVIe, XVIIe et XVIIIe siècles* Paris, 1898, J. F. Montucla, *Histoire des mathématiques*, nouvelle édition, 4 vols (Paris; chez Henri Agasse, 1799-1802), vol. 1, p. 576; vol. 2, p 316; D. E. Smith, *Rara arithmetica* Boston/London, 1908.

[11] The *Medicina* (Paris: Andreas Wechel, 1554) is a composite work including the *Physiologia, Pathologia* and *Therapeutice*. For a bibliography of printed editions see Sherrington, *op cit.* (n. 1 above), pp. 187-207.

[12] This paragraph is based on the publications mentioned in note 2.

Daléchamps, who writes to Fernel from Lyon, is first to be found residing and working in that city in the year 1552. Fernel, by then a long-established, distinguished member of the faculty of medicine at Paris, died from a fever on April 26, 1558.[13] His death was noted in the *Commentaires* of the medical faculty sometime later, but clearly within that very year, 1558.[14] In all probability, then, Fernel's death would have been known to most prominent French physicians by late autumn of 1558. We may consider, in consequence, the year 1552 as the *terminus a quo,* and early 1559 the *terminus ad quem* for the purpose of establishing a precise dating of our letter. In any case, within this general time-span, Daléchamps would have been a relatively unknown, though promising, physician; among Lyonnaise humanists and medical men a prominent figure and one whose stature would grow considerably in Europe during subsequent decades.

It was, then, a Daléchamps without far-reaching reputation who wrote to Fernel requesting favor to influence highly-placed personages at court and in government. Fernel, to be sure, was well known by our earlier date, 1552, with a reputation solid enough and accomplishments formidable enough to ensure both contemporary fame and the testimony of posterity to his greatness. He was, moreover, not without recognition at court. Earlier he served as physician to the dauphin, now Henry II, and his advice was credited with producing the seemingly miraculous fertility of the hitherto barren Catherine de Medici, Henry's wife and Queen.[15] Nevertheless, Fernel's professional stature and potential political influence at court undoubtedly enjoyed a significant increase after 1555. By that date Fernel's *magnum opus,* his monumental *Medicina* of 1554—in scope an undertaking truly befitting this "French Galen"—had been published and disseminated widely.[16] In addition, after much hesitancy Fernel finally accepted, in 1556, Henry II's urgings to join his retinue. From that date until his death Fernel held the office of *premier physicien du roi.*[17]

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[13] Sherrington, *op. cit.* (n. 1 above), p. 136; Figard, *op. cit.* (n. 1 above), p. 39.

[14] *Commentaires de la Faculté de Médecine de l'Université de Paris (1516-1560),* publiés avec une introduction et des notes par Marie-Louise Concasty (Paris: Imprimerie Nationale, 1964) In notes extending over the years 1557-1558, it is recorded that: "Die 26 aprilis, magno ordinis nostri et totius Gallie incommodo obiit clarissimus et doctissimus vir Joannes Frenelius [*sic*], regis primarius medicus. . . ," p. 614, column b. On the 7th of June, 1651, Guy Patin added a manuscript annotation in homage to Fernel. His praise indicates Fernel's reputation in 17th-century medical circles. Patin's full remarks appear on p 623, col b and p. 624, col a. The original 16th-century notice of Fernel's death in the *commentaires* was inscribed during the tenure of Antoine Dufour (Antonius Furnius) who was Doyen of the faculty of medicine from 1556-1558. Dufour was succeeded in this position by Francois Brigard sometime late in 1558. Brigard's "commentaries" begin with a report dated the 5th of November, 1558

[15] It is not possible to determine Fernel's role in removing Catherine's sterility, if indeed he had any at all. Shortly after his death, if not during his own lifetime, Fernel was commonly given credit for restoring Henry's queen to fertility For a fuller discussion of the reports, and critical evaluation, see P Bayle, *Dictionnaire historique et critique,* Tome 6 (Dr-F), nouvelle éd. (Paris, 1820), art. "Fernel (Jean)," pp 422-432; Goulin, *op. cit.* (n. 1 above), pp 331-344; and Sherrington, *op cit* (n 1 above), pp 175-7.

While consideration of such highpoints late in Fernel's career strongly suggest a dating of Daléchamps' letter late within our established time period—let us say between 1556 and the beginning of 1559—external evidence alone cannot raise the probability of this dating beyond the level of conjecture to the plane of established fact. For corroborating evidence, and indeed an even more precise dating, we must turn now to the testimony of Daléchamps' letter. We find Daléchamps addressing Fernel in a most lavish and complimentary manner as one who has enjoyed the favor of kings, one who is, "beloved by the most Christian king," and, "who never departs from him."[18] By grace of his most distinguished virtue and accomplishments and the esteem and influence such have garnered for him with the king, Daléchamps then looks to Fernel, as a defender of medicine and all the arts, in the cause he has been pursuing. The very form which Daléchamps' praise of Fernel takes, and the nature of the favor sought, suggests then that Fernel is being addressed in an official capacity, in all probability as an esteemed member of the king's own household. In its general tone our letter supports the probability of its late date of composition, 1556 or later, when Fernel as a *premier physicien du roi* was in fact an intimate participant in Henry II's household.

Even more precise and conclusive evidence for a late dating is found, moreover, in Daléchamps' references to his immediate reasons for writing to Fernel: to wit, the publication in his own city of Lyon of a work that he felt slandered the medical profession. The work which drew his ire came from the pen of a certain Pierre Braillier. This polemical work, as well as the letter addressed to Fernel, forms a part of the long and bitter dispute between physicians and apothecaries which has marked the history of medicine. In antiquity there were already indications of disputes between these two groups.[19] They continued for many centuries, the situation in seventeenth-century England being particularly well documented and the subject of recent interest.[20]

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[16] See note 11 above

[17] Fernel had been physician-in-chief to Henry as dauphin. According to Plancy, Fernel resisted appointment as Henry II's *premier physicien.* Henry kept on Francis I's former physician-in-chief, Louis de Bourges, but his death left Fernel little opportunity to counteract Henry II's pressure. See Plancy, *op cit.* (n. 1 above), Sherrington, *op cit.* (n 1 above).

[18] See the Latin text, lines 11-15. Subsequent references to appropriate lines in the Latin text will appear in parentheses.

The immediate context of physician-apothecary rivalry relevant to Daléchamps' letter is as follows.[21] In 1553 at Tours there was published a brief treatise entitled *Déclaration des abuz et tromperies que font les apoticaires* under the name of Lisset Benancio.[22] Three years later the same work was reprinted at Lyon. The author of the work was actually a little known physician from Fontenay-le-Comte named Sébastien Colin, of which the name 'Lisset Benancio' forms an anagram. Colin's work is an open attack on contemporary apothecaries and contains many abusive statements which were certain to unsettle the apothecaries themselves. In reply to this work, a second pamphlet entitled *Déclaration des abus et ignorances des médecins* was published by Pierre Braillier at Lyon a year later (1557). Though the dispute did not end there,[23] it was the publication of Braillier's work in Daléchamps' own city of Lyon which incited the letter to Fernel. Consequently we may conclude with assurance that our letter was composed no earlier than 1557, the date Braillier composed the pamphlet Daléchamps found so objectionable.

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[19] For some indications on antiquity see J. Scarborough, "Romans and physicians," *Classical Journal*, 1970, *65*: 296-306, esp. 304-6.

[20] P. M. Rattansi, "The Helmontian-Galenist controversy in Restoration England," *Ambix*, 1964, *12*· 1-23; C. Webster, "English medical reformers of the Puritan revolution: A background to the 'Society of Chemical Physitians,'" *Ambix*, 1967, *14*· 16-41; and T. M. Brown, "The College of Physicians and the Acceptance of Iatromechanism in England, 1665-1695," *Bull Hist. Med.*, 1970, *44* 12-30.

[21] On the dispute the following literature is helpful: L. Grimbert, "Médecins et pharmaciens au XVIe siècle," *Revue scientifique* 1890, *45* (3^{e} sér., t. 19), 783-7, the introduction to *Declaration des abuz et tromperies que font les apoticaires* . . . composée par Maistre Lisset Benancio (Sébastien Colin). Nouvelle édition revue, corrigée et annotée par le Dr. Paul Dorveaux (Paris: H Welter, 1901), V-XXII; L. Thorndike, *History of Magic and Experimental Science* (New York: Macmillan, 1923-58) V, 464-6; N. F Osborne, *The Doctor in the French Literature of the Sixteenth Century* (New York· King's Crown Press, 1946), esp 36-41; *Oeuvres complètes de Bernard Palissy*, ed. Paul-Antoine Cap., new ed (Paris· Albert Blanchard, 1961), 385-8.

[22] Further information on the various editions of this work can be found in Dorveaux's introduction cited in the previous note. Colin's work was reprinted at Rouen in 1557. There was a Latin translation of it made by the eminent Danish physician Thomas Bartholin, which appeared at Frankfurt in 1667, being reprinted in 1671. A German translation was made from the Latin and was published at Frankfurt-Leipzig in 1753

[23] Braillier's work was (with Colin's) reprinted at Rouen in 1557. A year later it was attacked in print by Jean Surrelh's *Apologie des médecins contre les calomnies et grands abus de certains apothicaires* (Lyon, 1558) It, in turn, was attacked by a second work of Braillier, *Les articulations sur l'apologie de Jean Surrelh* (Lyon, 1558).

Braillier's first work was for a time attributed to Bernard Palissy by several scholars who thought that Palissy had written it under the pseudonym of Braillier! See e.g. *Oeuvres de Bernard Palissy*, ed Faujas de Saint Fond (Paris, 1777), 395-460 Cf. Palissy, *Oeuvres* (n. 21 above), 385-8.

Lyon was one of the great centers of medical printing of the sixteenth century. Even though the French city did not have a university at the time, it was second only to Paris as a center for the publication of medical works in the century.[24] Daléchamps himself was a close associate of one of the major Lyonnais printers, Guillaume Rouille.[25] With him he collaborated on a number of publications and, indeed, Daléchamps contributed in no small way to maintain Lyon's prestigious place in sixteenth-century medical publication. Daléchamps certainly had an important and influential place as far as medicine in Lyon was concerned. Nevertheless, he does not seem to have been in a position to choke off completely the acid pen of apothecaries critical of medicine.[26] For that he wanted to enlist the aid of the man who was perhaps the most influential medical figure in France at the time, Jean Fernel.

Daléchamps' letter catalogues many of his grievances against the apothecaries: complaints shared to a great extent by numerous medieval and early-modern physicians.[27] However, his letter also suggests certain local colorations to the general picture of physician-apothecary disputes peculiar, it seems, to Lyon. Thus, glimpses are provided into a host of legal, political and institutional vagaries that served to escalate a serious, though limited, professional rivalry into an unwieldy local *cause célèbre* (if we are to accept Daléchamps' vituperative prose literally) dwarfing the Lyonnais physicians' power to force a satisfactory resolution. Daléchamps' grievances begin modestly enough with a report of the hosts of insults and slanders from the arrogant pen of Pierre Braillier at which he takes umbrage and against which judicial recompense is sought. The results of the judicial proceedings he engaged in were far from satisfactory, and Daléchamps seems to attribute this outcome more to the failings of lawyers and the system of adjudication in civil disputes than to an intrinsic weakness of his case. If we are to judge by his stinging remarks (lines 32-34), Daléchamps' allegiances in humanist debate concerning the relative dignity of law and medicine are unequivocally in the camp of the physicians![28]

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[24] For an indication of this see R. J. Durling, "A chronological census of Renaissance editions and translations of Galen," *J Warburg and Courtauld Institutes*, 1961, *24:* 230-305, at 298-305. The significance of this has not yet been adequately emphasized, nor have the details of medical publishing at Lyons been properly studied. For a general survey of Lyon's place in the history of medicine see *Lyon et la médecine, 43 av. J C.-1958* (numéro spécial de la *Revue lyonnaise de médecine*), 1958, *7* esp. 73-124 for the Renaissance period.

[25] In addition to my papers cited in note 2 see N. Z. Davis, "Publisher Guillaume Rouillé, Businessman and Humanist," in R. J. Schoeck (ed.), *Editing Sixteenth Century Texts* (Toronto: University of Toronto Press, 1966), 72-112, which cites earlier literature on Rouillé.

[26] It is not without interest that the publications of both Colin and Braillier were produced in Lyon by the same printer, Michel Jouve. This was during the early years of Jouve's activity He later became important as a printer of Jesuit literature in Lyon. For information see J. Baudrier, *Bibliographie lyonnaise* (Lyon, 1895-1921) II, 82-147, 433-8, who also adds to our knowledge about Colin and Braillier (pp. 91-2, 94) The two works were printed together at Rouen by Jean de Tournes. See *Declaration des abuz* (n. 21 above), XXI.

[27] See articles cited in note 20 for examples of early modern tensions in England.

Hence the first, and probably most immediate, reason for writing to Fernel is to seek lasting compensation for, and sanctions against, Braillier's attacks: "... ad te nos convertimus, te respeximus, auxiliumque simul tuum ac collegii parisiensis flagitavimus, ut nos a tam insigni calumnia protegatis" (lines 34-37). But Braillier's pamphlet, in addition, became for Daléchamps an occasion for giving voice to more serious and far-reaching grievances directed against Lyonnais drug-vendors in general. Moreover, in addition to widening the horizon of his counter-assault, Daléchamps, as we shall see, sought concrete legal reforms and judicial actions that complicated (probably beyond his expectations) the parochial, inter-professional issues involved, thus precipitating fundamental reactions within his Lyonnais community and making all the more urgent and necessary appeal to Fernel and royal authority.

First Daléchamps shifts his focus onto a new target. For arrogance such as that displayed by Braillier, he observes, left unchecked by proper authorities, serves to reinforce and broaden the already scandalous and fraudulent activities common to drug-vendors. Daléchamps then marshalls an impressive, if somewhat formulaic,[29] list of grievances against Lyonnais drug-vendors, among them charges that they "openly examine the urine of the sick"; employ trickery, hence (we may surmise) incurring the charge of charlatanism; administer, in effect, poisons and order the letting of blood; visit, and care for, the sick in addition to preparing and prescribing antidotes without the authorization of a physician; and, finally, that their shops are filled with wares of a poor, indeed, "putrid" quality (lines 42-48). Traditional as such complaints might be, and notwithstanding the probability that such highly-charged claims might be used as effective propaganda serving well the physicians' own interests, they were nonetheless substantial enough for Daléchamps and his fellow physicians to demand that attention be paid by authorities to those peculiar legal and institutional arrangements that could permit, even encourage, such practices to flourish at Lyon. Thus Daléchamps is careful to preface his list of general complaints against the Lyonnais drug-vendors with reference to a *specific* state-of-affairs to which he evidently attributes great weight and serious consequences for the healthful and proper functioning of the drug-vendors' trade. In particular, Daléchamps is concerned by that state-of-affairs which would allow even the "*indoctis ac ignaris*" to establish themselves in the drug-vending business: for Lyon, he notes, does not require by law that knowledge of drugs be tested (lines 38-42).

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[28] On this debate see: Coluccio Salutati, *De nobilitate legum et medicinae. De verecundia.*, a cura di Eugenio Garin (Edizione Nazionale dei Classici del Pensiero Italiano, 8) (Firenze: Vallecchi, 1947); Lynn Thorndike, "Medicine versus law in late Medieval and Medicean Florence," *Romanic Review*, 1926, *17*. 8-31; and E. Garin (ed.) *La disputa delle arti nel Quattrocento* (Firenze. Vallecchi, 1947) for other relevant texts and comments.

[29] For evidence of similar complaints against drug-vendors, and attempts to curb them, see Pearl Kibre, "The Faculty of Medicine at Paris, charlatanism, and unlicensed medical practices in the later Middle Ages," *Bull. Hist. Med.*, 1953, *27*: 1-20, esp. pp. 6, 14, 15, 16; C. A. E. Wickersheimer, *La médecine et les médecins en France à l'époque de la renaissance* (Paris: A. Maloine, 1906), esp. section entitled "L'Apothicairerie," p. 556 ff., *passim* (a 1905 edition by the same publisher contains quite different pagination), *Chartularium universitatis parisiensis*, ed. by H. Denifle and E. Chatelain, 4 vols. (Paris, 1889-1897), esp. items cited below in subsequent footnotes. See also, Lynn Thorndike (ed. & trans.) *University Records and Life in the Middle Ages* (New York: Columbia University Press, 1944).

Daléchamps repeats, of course, many of the same complaints raised by Colin, *op. cit.* (n. 21 above), against the apothecaries. For other 16th-century remarks on apothecaries, their errors, and the manner in which physicians should deal with them, the work by Martin Stainpeis is of considerable interest; see Richard J. Durling, "An early manual for the medical student and the newly-fledged practitioner. Martin Stainpeis' *Liber de modo studendi seu legendi in medicina* ([Vienna], 1520)," *Clio Medica*, 1970, *5*: 7-33.

The point is crucial for Daléchamps. For from this recognition of inadequate legal restraints upon drug-vendors flow programmatic suggestions which were perceived as threats to an established legal, institutional and political order. Daléchamps' suggestions then are rooted in an appraisal of the regulations governing drug-vendors at Lyon that in all likelihood would have invited comparison to corresponding regulations at Paris. For what sort of policing measures did the regulations governing drug-vendors provide? Prior to 1571, as best as we can determine, no sharp distinction was made between herbalists (*épiciers*) and apothecaries at Lyon—at least with respect to their organization and corporate membership in a specific *métier*.[30] The Lyonnais did, of course, make the linguistic distinction between *apothicaire* and *épicier*, attributing to each term a corresponding set of functions and abilities.[31] Nevertheless, this formal, terminological differentiation seems not to have been translated into a rigid professional distinction. Lacking established procedures, sanctioned by either local custom or ordinance, for the enfranchisement of apothecaries with rights, duties and functions separate-from, and in addition to, those enjoyed by herbalists and drug-vendors alike, the Lyonnais were forced to live with fluid boundaries separating these *métiers*. In practice this meant that it was often difficult to distinguish the true apothecary (one whose abilities, acquired through formal training and apprenticeship, fit the definition signified by the term *apothicaire*) from the less qualified *épicier* who assumed the duties, even the name, of an apothecary. Although truly qualified apothecaries might themselves raise objections at times,[32] such legal-institutional arrangements as existed at Lyon seemed to encourage abuses in which the "indoctis ac ignaris" could set themselves up as apothecaries. Only legal-institutional reform, consequently, could attack successfully a potentially grievous problem endemic to the system of health care itself.

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[30] Thus at the time Daléchamps is writing no separate laws existed at Lyon distinguishing the rights, duties and licensing of apothecaries from those of the herbalists. One might just as easily set oneself up as an *épicier* or apothecary See Charles Henri Fialon, "Ancien statuts de la Corporation des Maitres Apothicaires de Lyon (1588–1595–1659)" *Proc. 3rd Int. Congr Hist Med. (London, 1922)* (Antwerp: De Vlijt, 1923). 221-224; and, André Pontier, *Histoire de la pharmacie* (Paris, 1900), p 87.

[31] Certainly the functional and linguistic distinctions were common in France by the early 16th century, as is evidenced by the demands of those calling themselves apothecaries that they be *legally recognized* as a distinct *métier* Wickersheimer, *op. cit.* (n. 29 above), p. 557, notes the common acceptance of the 1514 ordinance of Louis XII, covering Paris only, as a turning-point in the controversy over the corporate identity

In casting about for possible models for such reform at Lyon, the example of Paris might easily commend itself to Daléchamps. As at Lyon, apothecaries and *épiciers* had long shared a common corporate structure, though the precise corporate relationship between these two groups or *métiers* was often unclear, at some times well documented and highly specified, but always a source of considerable friction.[33] Within this corporate arrangement, however, well-defined professional boundaries had been, at least *de jure*, established. This separation of rights and duties had been accomplished

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of *apothicaires* and *épiciers*. Included in that ordinance is the assertion, "Qui est espicier n'est pas apothicaire, et qui est apothicaire est espicier." Wickersheimer argues for an earlier date for this distinction, at least for Paris. At Lyon, pressure was brought to bear to formalize such a distinction, though without legal success. Nonetheless such pressures early in the 16th century do bear witness to the existence of separate intellectual, if not legal, categories for apothecaries and herbalists in common Lyonnais parlance. For the term "apothecary" in the middle ages, see Rudolf Schmitz, "Über deutsche Apotheken des 13. Jahrhunderts: Ein Beitrag zur Etymologie des Apoteca-Apotecarius Begriff" *Sudhoffs Archiv*, 1961, *45:* 289-302.

[32] Both Fialon, *op. cit.* (n. 30 above), p. 221, and Pontier, *op. cit.* (n. 30 above), p. 87, call attention to the efforts, in 1519, of Lyonnais apothecaries to reject the encroachments of the inferior *épiciers* upon their expertise by claiming right to a separate corporate identity. In this attempt they likely drew inspiration from the slightly earlier Parisian examples.

[33] Wickersheimer, *op. cit.* (n. 29 above), pp. 556 ff. For relevant documents regarding *apothicaires* and *épiciers* the collection by René de Lespinasse is important: *Les métiers et corporations de la ville de Paris*. t.1. *XIVe-XVIIIe siècles. Ordonnances Générales, métiers de l'alimentation* (Paris: Imprimerie Nationale, 1886). Also see the useful collection by François Prevet, *Les Statuts et règlements des apothicaires textes intégraux accompagnés de notes critiques*, 5 vols. (Paris: Librairie du Recueil Sirey, 1950), esp. t.1 ("Paris avant le XVIe siècle") pp. 1-59, and t.2 ("Paris XVIe siècle") pp. 61-207, which prints documents from a variety of sources including the *Chartularium*, and items contained in Lespinasse.

through the agency of royal actions and the prerogatives of university faculties to police those domains to which its charter had granted it exclusive rights.[34] Cumulatively, royal decree duly enregistered with the Parlements of Paris and university regulations served to check and prohibit a number of common practices and to establish precise regulations governing the apprenticeship of apothecaries, their “licensing” or enfranchisement as masters and the limitations of their activities. Specifically, such regulations prohibited a broad range of practices, including the visiting of the sick and the administering of medicines without the authorization of a physician,[35] and the use of corrupt medicines, or drugs that had lost their potency.[36] In addition, such prohibitions were underlined through periodic inspections by the master apothecary of shops where herbs, spices and drugs were sold, together with direct medical supervision of apothecaries themselves by members of the medical faculty in conjunction with the master apothecaries' periodic visits.[37] Moreover, by the mid-fifteenth century the tacit distinction between *épicier* and *apothicaire* was made concrete, and limitations on the art and practice of pharmacy more exact, by the articulation of specific requirements for the apprenticeship of apothecaries.[38] Finally, the abilities of an apothecary had to be tested by the successful production of a *chef*

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[34] For a brief account of the foundations and growth of the medical faculty's prerogatives to police medical practitioners at Paris, and of its clashes with barbers, surgeons, apothecaries and “charlatans,” see Kibre, *op. cit.* (n 29 above), and Vern L. Bullough, “The development of the medical guilds at Paris,” *Medievalia et humanistica*, 1958, *12*. 33-40. See also *Chartularium universitatis parisiensis*, vol. I, pp. 488-90 (no 434), vol. II, pp. 349-399 (nos. 918-943), and Thorndike, *University Records*, pp. 83-85.

[35] Kibre, *op. cit.* (n. 29 above), 6, 15, 16; *Chartularium*, vol. I, pp. 488-490 (no. 434), vol. II, pp. 268-269 (no. 817), vol. III, pp. 16-17 (no. 1211); Thorndike, *University Records*, pp. 83-85, 235-236.

[36] Kibre, *op. cit.* (n. 29 above), 14; *Chartularium*, vol. II, pp. 268-269 (no. 817).

[37] Kibre, *op cit.* (n. 29 above), 14-15, 16; *Chartularium*, vol II, pp. 268-269 (no. 817), vol. III, p. 20 (no. 1215); Lespinasse, *op. cit.* (n 33 above), “Lettres patentes du roi Jean, prescrivant des règlements en 7 articles pour les apothicaires” [August 1353], pp 504-505

[38] Lespinasse, *ibid.*, “Lettres patentes de Charles VIII érigeant en métier juré les épiciers-apothicaires, avec des règlements en forme de statuts” [August 1484], pp. 508-511. Among the rules governing apothecaries and herbalists under this important ordinance was the requirement that each candidate first serve a four-year apprenticeship under a recognized master before being admitted as a master of his particular *métier*. Moreover the regulations are quite explicit in prohibiting *épiciers* who have *not* served apprenticeships with a master apothecary from assuming the duties of an apothecary: see article #3, pp. 509-510, “Et pource aussi que en nostredite ville de Paris, plusieurs espiciers qui ne se congnoissent au fait et art d'apoticairerie se sont par cy-devant voulu mesler et entremettre d'icelluy mestier d'apothicaire, soubz umbre d'avoir varlet apoticaire qu'ilz ont accoustumés tenir en leurs maisons, nous avons ordonné et ordonnons en oultre que doresnavant nul espicier, en nostredite ville et cité de Paris, ne se puisse mesler du fait et vacation d'appoticaire [sic], soubz umbre d'avoir serviteur apoticaire, qui vouldroit tenir en sa maison, se le dit espicier n'est luy mesmes apoticaire congnoissant et aprouvé oudit mestier et qu'il eust luy mesme demouré et servy en iceluy mestier d'apoticairerie l'espace de quatre ans apprentiz, fait le serment et gardé les solempnitez cy dessus requises ”

d'oeuvre,[39] and both *épiciers* and apothecaries were required to swear an oath to abide by the prohibitions and regulations ordained by the medical faculty and governmental edict.[40]

The contrast between Lyon and Paris could not have been greater to Daléchamps' mind. Where one city permitted the most serious abuses to flourish unchecked, the other officially condemned and prohibited them; at Paris drug-vendors were required to swear solemn professional oaths and be trained and tested fully in their art, at Lyon no such legal impediments to the practice of that art existed. The causes of serious abuses at Lyon had been traced by Daléchamps to inadequate legal constraints upon apothecaries. Now it appeared that legal reform, based on concrete judicial actions patterned after Parisian statutes regulating apothecaries, would provide an effective means of curtailing abuses and restraining audacious drug-vendors. Only the means to institute such legal reform remained to be discovered.

It is at this point that the full weight of institutional, judicial and political factors at Lyon became an obstacle to Daléchamps' reforming schemes and a burden the Lyonnais physician would find immovable without the aid of Jean Fernel. Lyon lacked an established University and medical faculty with "ancient" rights, privileges and immunities granted by Papal decree and safeguarded by royal edict. Hence a valuable institutional instrument for the reform of legislation pertaining to health care and medical practice, the adjudication of professional medical disputes and prosecution of unqualified practitioners was unavailable to Daléchamps and his fellow physicians.[41]

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[39] Thus according to the above-mentioned ordinance (Lespinasse, *ibid.*, p. 508) at the conclusion of one's apprenticeship the candidate was required to produce, before an official body of sworn masters, a *chef d'oeuvre* of a sort appropriate ("chacun en son regard") to the specific *métier* to which the candidate seeks admission as a master.

[40] As Lespinasse, *ibid.*, suggests by the title prefacing the text of Charles VIII's ordinance, the purpose of the new statutes was to create a new status for *épiciers* and apothecaries, making each a *métier juré*. Hence each master became a *maître juré* bound by oath to accept and uphold the new regulations governing his chosen *métier*, and to observe the professional boundaries separating it from related *métiers*. Among the professional regulations ascribed to by the *maîtres jurez* were those covering apprenticeships, production of the *chef d'oeuvre*, and the various measures aimed at policing the *métiers*, including visitations and inspections of wares (see p. 510). In addition to becoming *métiers jurez* under this ordinance, the *épiciers* and apothecaries at Paris were traditionally bound by oath to adhere to the regulations imposed by the University medical faculty. See Kibre, *op. cit* (n 29 above), pp. 6, 15; *Chartularium*, vol. I, pp. 488-490 (no. 434), vol. II, pp. 268-269 (no. 817), vol. IV, pp. 406-407 (no. 2196); Thorndike, *University Records*, pp. 83-85, 298-299 As Kibre notes (p. 15), "On May 22, 1336, King Philip VI of France addressed the provost of Paris and his lieutenant to the effect that they must enforce the law requiring apothecaries to take the oath to obey the ordinances of the medical faculty. The apothecaries were also to be required to swear that they would take care to see that their subordinates and the herbalists took the same oath to uphold and observe the ordinances."

[41] Again, see Kibre, *ibid.*, and Bullough, *op. cit.* (n. 34 above), for the importance of the University medical

Indeed, the absence of a medical faculty vigorously assertive of its own historic prerogatives to formulate and enforce medical policy at Lyon, together with the importance of the *maistres des mestiers* in the Lyonnais government[42] (among whom the *épiciers* could be expected to be influential), probably contributed more than other factors to the evolution of precisely that ill-defined and insufficiently regulated state-of-affairs regarding drug-vendors that Daléchamps sought to correct in the first instance. As a consequence of this unusual institutional circumstance, Daléchamps was forced to attempt his desired legal reform through the adjudicative and legislative instruments of Lyonnais civil government itself. Since his proposed reforms were bound to arouse the opposition of those politically influential drug-vendors who would be most adversely effected by them,[43] it is not surprising

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faculty in policing medical practitioners at Paris. The University medical faculty was not only vested with the authority to grant licenses to practice medicine at Paris, but also kept a watchful eye over the surgeons and apothecaries, and exercised considerable authority with respect to their training and practice. See also, M. L Concasty, "L'exercice de la médecine à Paris," pp. LXI-XC in her "Introduction" to the Paris *Commentaires, op. cit.* (p. 14 above), and Wickersheimer, *op cit* (n. 29 above), pp. 70-71, and p. 19, where it is stated that, "Dans les villes qui ne sont pas le siege d'une université il est plus difficile aux médecins de se défendre contre l'exercice illégal de leur profession. . . ." In addition to the medieval examples cited by Kibre, there were numerous 16th-century instances in which the medical faculty vigorously prosecuted those whose medical practices and opinions were unacceptable to the learned doctors (see *Commentaires, passim*).

[42] According to Claude de Rubys, *Les Privilèges, franchises et immunitiez de la ville de Lyon* (Lyon, 1573), p. 48, the *maistres des mestiers* played a prominent role in the election of the *eschevins*, or the *Consulat*, and hence in Lyonnais government generally. The *maistres des mestiers* were composed of two masters from each *métier*, chosen by the *Consulat*, together with the two *terriers*, the *maistres* then in turn elected the *eschevins* annually! See also Gaston Zeller, *Les Institutions de la France au XVI^{e} Siècle* (Paris: Presses Universitaires de France, 1948), pp. 54-55. For economic and socio-political data on Lyon see R. Gascon, *Grand commerce et vie urbaine au XVI^{e} siècle Lyon et ses marchands (environs de 1520-environs de 1580)*, 2 vols. (Paris: S.E.V.P E N., 1971); of particular importance is chapter III, section III, "L'impact politique," vol. 1, pp. 407-435, where Gascon outlines the increasing political power, in fact the ascendancy, of the merchant class in 16th-century Lyon (see "La commune aux mains des marchands," pp. 408 ff.). In this rise to political power, the *Consulat* played a central role; in fact, according to Gascon "une révolution s'est accomplie qui a fait du Consulat le bien et l'instrument de puissance des plus riches familles marchandes" (p. 410), and indeed "les grandes dynasties marchandes sont devenues les grandes dynasties consulaires . ." (p. 411). Most significantly for our purposes there were three predominantly rich and powerful professions which in the 16th century "conduisent naturellement au Consulat: la draperie de laine, les draps de soie et l'épicerie" (p. 412; for a detailed social and economic profile of Lyon see pp. 357-406, and esp. p. 398 for the prominence of the *épiciers* within the hierarchy of *métiers*). Finally, on pp. 429-30, Gascon discusses "la crise de 1558" involving an attack on the political hegemony of the "marchands" by the Lyonnaise clergy. The king's procurator, Mgr. Girinet, noted the prominence of the *épiciers* and the two other chief *métiers* and complained that the "pères, fils, frères, neveux, oncles et associés du même métier avaient fait entre eux *ung patrimoine et chose héréditaire du Consulat.*" Hence the *épiciers* were powerful not only among the *maistres des mestiers*, but among the *eschevins*, or *Consulat*, which chose the *maistres* and administered Lyonnais affairs.

[43] Among the *maistres des mestiers* mentioned by De Rubys, *op. cit.* (n. 42 above), would of course be two masters representing the *épiciers* In a city so heavily dependent upon its international trade and fairs, the

that Daléchamps' proposal for stricter laws met with little enthusiasm among local authorities (lines 59-60).

Yet if Daléchamps' arguments for reform were directed in such a fashion as to generate little else but silent opposition and inaction, the legal basis in which his appeals for reform were grounded was calculated to arouse a heated reaction among independent minded Lyonnais citizenry and magistrates. For by appealing to "the percept and customary law of other French cities" as grounds for forcing change in Lyonnais legislation that would, in turn, enable one to "prevent the ignorant and incompetent from the possibility of exercising their trade" (lines 52-55), Daléchamps (wittingly or not) transformed a traditional, if complicated, physician-apothecary dispute into an issue of local autonomy versus centralized government.

In the loose federation of individual citizens, estates, corporate entities and municipalities that constituted the French state of the sixteenth century, the French king stood as the symbol and safeguard of justice throughout the realm. The various entities that made up the state were unified by a common recognition of the ultimate jurisdiction of the crown, which in turn was obligated to uphold their traditional and sovereign rights.[44] Within its more limited jurisdiction, municipalities such as Lyon normally enjoyed the right to make their own laws and asserted the right to regulate their own affairs, adjudicating local disputes according to local precepts and customary law. During the reigns of Francis I and Henry II, however, France witnessed a marked increase, in extent and complexity, of the royal bureaucracy, and with it an assertion of the prerogatives of royal power and authority—trends continued by subsequent Valois monarchs, and later by the Bourbons.[45] The assumption by royal authority, through the agency of the king's local representatives, of jurisdiction in the adjudication of local civil disputes increased considerably, despite opposition, during the century culminating in the Or-

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masters of as important and powerful a *métier* as the *épiciers* undoubtedly carried great weight in local issues. See the evidence in Gascon, cited in the previous note.

[44] For general background on 16th-century French thought concerning the nature of monarchy and its relationships to fundamental units of the French state, see William Farr Church, *Constitutional Thought in 16th Century France* [Harvard Historical Studies, vol XLVII] (Cambridge Harvard University Press, 1941; repr., New York· Octagon Books, 1969). In addition, J. H. Shennan's *Government and Society in France, 1461-1661* (London: Allen & Unwin; New York: Barnes and Noble, 1969) is a useful introduction to the structure and functions of the 16th-century French state

[45] See Church, *ibid.*, pp 55 ff., and *passim*, for changing attitudes toward the extent and scope of royal prerogatives and authority in the 16th century. On government and the royal bureaucracy, see Shennan, *op cit* (n. 44 above); and J H M Salmon, *Society in Crisis France in the Sixteenth Century* (London. Ernest Benn, 1975), pp. 59-91.

dinance of Moulins (1566).[46] As a consequence, the intervention of a king's procurator at Lyon in a dispute of purely local dimensions was bound to raise from Lyon's administrators angry re-assertions of her status as a free city (lines 60-63). The fear of royal encroachments upon local sovereignty was grounded in more than hysteria or contentiousness.

But beyond this threat to Lyon's jurisdictional sovereignty, Daléchamps' appeal to a *common* French customary law raised the spectre of royal usurpation of the more fundamental, and deeply rooted, right of Lyon to exclusive legislative authority within its own domain. The issue here is perhaps a more subtle one, but one that was grasped readily enough it seems by the Lyonnais administrators. For the customary law and precepts of a locality are at once expressions and guarantors of the individuality and autonomy of the community: their value to that community, as a consequence, is inextricably bound up in precisely those elements that make them unique. By the middle of the sixteenth century the effort begun in 1454 by the Ordinance of Montilz-les-Tours to codify the unwieldy customary laws of France[47] had spawned a scholarly program to regularize and rationalize them.[48] The principle, implicit in Daléchamps' arguments, that local custom and law might be subordinated to a new national ideal of a coherent and unified French customary law, would seem to diminish municipal sovereignity. In effect, the power to override Lyonnais customs and laws would be ceded to outsiders: to bureaucrats like the king's procurator; to the king's counsel and his court at Paris. By allowing the king or his representatives to weigh the merits of hitherto inviolable local custom against the principles operative in a rationalized *common* customary law when adjudicating purely local disputes would undermine *both* the jurisdictional and legislative powers of local government. Such decisions would establish a royal prerogative to make laws for Lyon.[49]

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[46] See Zeller, *op cit.* (n 42 above), p. 45.

[47] Gabriel Le Pointe, *Histoire des Institutions et des faits sociaux (987-1875)* (Paris. Éditions Montchrestien, 1956), pp. 345 ff.; Joseph van Kan, *Les efforts de codification en France. Étude historique et psychologique* (Paris: Rousseau, 1929), pp. 9-27; and René Filhol, *Le Premier Président Christofle de Thou et la reformation des coutumes* (Paris· Libraire du Recueil Sirey, 1937), pp. 61 ff. and 125 ff.

[48] Foremost among the legists who envisioned a common customary law for France was Charles DuMoulin (Carolus Molinaeus). See esp. the "Oratio de concordia et unione consuetudinum Franciae" in vol. II of his *Omnia quae extant opera*, 5 vols. (Paris, 1681); Church, *op cit* (n. 44 above), pp. 105-120; and van Kan, *op. cit.* (n. 47 above), pp. 37-56 On DuMoulin, 16th-century French developments in legal theory and criticism, and the changing conceptions of history and historical criticism that formed the background to proposed reforms, see Donald R. Kelly, *Foundations of Modern Historical Scholarship: Language, Law, and History in the French Renaissance* (New York/London: Columbia University Press, 1970), Julian M. Franklin, *Jean Bodin and the Sixteenth-Century Revolution in the Metholology of Law and History* (New York/London: Columbia University Press, 1963); and George Huppert, *The Idea of Perfect History Historical Erudition and Historical Philosophy in Renaissance France* (Urbana/Chicago/London: University of Illinois Press, 1970).

In the face of such fundamental threats to Lyonnais authority, the details of Daléchamps' proposed legal reforms were not judged, we can be sure, on the basis of their merits as potential contributions to improved public health and medical practice. But Daléchamps' *specific* proposals were heard and judged in another light, one which illumined the symbolic threat posed by appeal to common customary law and precept, informing that threat with concrete substance and focusing municipal opposition upon a specific object. In concluding his appeal to Fernel, Daléchamps is more specific than elsewhere about the kinds of legal constraints he wished placed on drug vendors. They would be allowed to mix antidotes with physicians' approval save only if they had been tested. But more than that, Daléchamps would require all drug vendors to be bound by a "sworn oath" (lines 76-80); only *then* could they actively practice their art. This last requirement, a common formality throughout France among members of different *métiers,* held special meaning for the Lyonnais; the virtual absence of "mestiers jurez" at Lyon was a concrete symbol of Lyon's special status and unique privileges within the realm of the most Christian king. As one proud sixteenth-century citizen of Lyon explained, the absence of "sworn oaths" as a formal prerequisite to the practice of a *métier* was a source of Lyon's greatness—a happy and time-honored privilege defended by the Lyonnais:

> For the crafts [*mestiers*] of the aforesaid city, apart from the goldsmiths [*orfeures*], barbers and locksmiths [*serruriers*], are not sworn [*iurez*] as in many other cities of this kingdom: and this owing to the privileges of the market-fairs [*foires*] and the freedom of trade, by virtue of which it is lawful for peoples of all kinds and all nations to come freely to live in this city in order to exercise their livelihoods [*trains*], trades [*traffics*] or crafts, without being forced to any mastership [*maistrise*], *acte d'experience,* or *chef d'oeuure* which would only be an expense and delay to them, and would then be useless and profitless for them when they wished to return to their countries. And this liberty, confirmed by patent letters of King Charles VIII issued from Tours the 14th of December 1486, since extended through other patents of King Louis XII issued from Valence the 8th of July 1511, has brought such fruit that our *mestiers* have been thus far the most perfect and excellent of this kingdom; for as each arrives in this city sometimes from one foreign city or country, sometimes from another, bringing here some new procedure [*forme*] or mode [*façon*], he straightaway becomes all the rage, and the talk of the town; so that the others of the same *mestier,* if they want to keep earning are constrained to take up whatever these others have imported that is new. To such an extent that through this bringing together [*conference*] and communication of what is good and excellent in all provinces (of the kingdom as well

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[49] On the adjudicative and legislative prerogatives of the French crown, see Church, *op. cit* (n. 44 above).

> as of foreign lands) our artisans become excellent and perfect in their arts and crafts [*mestiers*]. There, in the sworn cities [*villes iurees*] where it is lawful for no one to open a shop except for those who have lived there for a long time, having served their apprenticeships and performed *actes d'experience* there, the artisans remain always in their ancient procedures and modes, and know nothing of what is smart or good elsewhere, save that little which they can cull from works [*ouurages*] made in this city or other where one may work in liberty. . . . Thus those who have wanted to deny us this liberty, and have undertaken to make our *mestiers* sworn [*iurez*], have sought nothing less than to ruin [*ruyner*] our *mestiers* and to destroy [*estruire*] their ancient perfection & excellence.[50]

Daléchamps' modest proposal had unleashed a tempest whose force only increased with the intervention of the king's procurator and the winds of change stirred up throughout the realm by talk of a common customary law. More seemed to be at stake than the rights of apothecaries or the health of a people: the very *pristina libertas* of Lyon and her inhabitants (lines 61-63). From Lyon, Jacques Daléchamps had now to turn to Paris, and the eminent Jean Fernel.

Hence the ultimate reason for the composition of our letter to Fernel was the frustration encountered by Daléchamps and the *collegium medicorum Lugdunensium* in their efforts to control the prescription, preparation, mixing and dispensing of drugs at Lyon through the imposition of legal restraints upon those aspiring to the *métier* of apothecary. A simple reform which, as we have seen, did not come easily. In light of the formidable legal and socio-political impediments in their way, the learned medical humanist of

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[50] Claude De Rubys, *op cit* (n. 42 above), pp. 48-49. De Rubys' exclusion of the apothecaries and *épiciers* from the limited list of *mestiers jurez* at Lyon thus is compatible with Daléchamps' proposed reform to curb the excesses of drug-vendors through requiring that they be bound by a "sworn oath." Daléchamps regarded this proposed requirement as an innovation, as no doubt De Rubys would have too. However, Fayard, in his *Études sur les anciennes juridictions lyonnaises* (Paris; Guillaumin, Lyon: P. Giraudier, 1867) claims instead that "quatre professions seulement étaient organisées en jurandes. c'etaient les professions d'apothicaire, de chirurgien, d'orfévre et de serrurier; les aspirants à l'une de ces quatre professions devaient subir un examen et faire un chef-d'oeuvre pour être admis à la maitrise." As evidence Fayard cites Inv(entaire) de l'hôt(el)-de-V(ille) [t. VI, p. 5]; Fayard, pp. 82-83, and also his *Essai sur l'établissement de la justice royale à Lyon* (Paris/Lyon, 1866) p. 68. We have not seen Fayard's evidence, and hence can neither vouch for its authenticity, nor directly refute it. Nevertheless, the existence of four "mestiers jurez," including apothecaries, would seem to conflict with Daléchamps' direct reports, and hence make his suggestion redundant. Moreover, Fayard cites evidence contrary to his own—and in exact agreement with De Rubys' above-quoted report: "Un édit de Louis XII, du 8 juillet 1511, ne fait mention que des orfévres, barbiers et serruriers, sans doute parce que les barbiers exerçaient alors, dans une certaine mesure, quelques-unes des fonctions d'apothicaire et de chirurgien *Rég des Arrêts*, B.B.29 *Arch mun* ," p 83, n 1, *Études* Fayard's argument explaining away this evidence is not entirely convincing.

For the importance of Lyon's privileged status as a town without "sworn masters," see Fayard, *Études*, pp. 82 ff. and pp. 87-89 for royal encroachments on such rights in the 16th century.

Lyon, Jacques Daléchamps, had but one last hope for pressing the case of the Lyonnais physicians. Daléchamps chose to circumvent the influence-ridden channels of justice at Lyon and to appeal instead to the highest *medical* authority in the land: the *premier physicien du roi,* the learned physician, medical philosopher and humanist Jean Fernel. Save for Fernel, whose medical authority was at least in theory co-extensive with his king's realm,[51] there was no one left in France to prevent the choking-off of reform by the Lyonnais drug-vendors.

Yet the success of this last-minute effort is questionable. Certainly no documents have yet come to light linking Fernel to Daléchamps and successful reform of physician-apothecary-*épicier* relationships at Lyon. Was Fernel unsympathetic to the complaints of his colleagues? On the contrary, it is more than likely that Daléchamps' letter would have struck, privately at least, a responsive chord in Fernel. As Plancy tells us, Fernel was often suspicious of the exotic, foreign-grown medicaments found in the shops of apothecaries, and preferred searching out native remedies and testing their effectiveness himself.[52] Moreover, Fernel considered the physician's duty not only to cast a watchful eye over the apothecary, but to take the initiative in acquiring expertise in the apothecary's art, to master the knowledge of simple and compound drugs, to discover *new* remedies and, in the end, to instruct apothecaries themselves.[53] Hence we might reasonably expect Fernel to support a scheme requiring physicians to supervise testing the abilities of apothecaries and inspecting the wholesomeness of their wares.

If the lack of any positive response from Fernel can not be attributed to antipathy to Daléchamps' cause, it may at any rate provisionally be attributed to adverse timing and circumstance. Daléchamps' letter seems to have been written in response to the controversy raised by publication of Pierre Braillier's pamphlet early in 1557. Even supposing that Daléchamps had access to a printer's copy before publication, it seems likely that the events described in his letter would not have transpired before mid-year of 1557. In fact, we can not rule out the possibility that the legal battles waged by the Lyonnais physicians consumed the entire year. What we are left with then is the probability, but by no means the certainty in the absence of corroborating documentation, that Daléchamps' letter was written sometime between mid-1557 and early 1558. Since Fernel died in April of 1558, even had Daléchamps' letter been composed by the earlier date it is not unthinkable that Fernel, with his busy schedule as the king's attending physician, might have been unable to pursue Daléchamps' request for assistance before his final illness and death. Finally, the very real possibility exists that Daléchamps' letter failed to reach Fernel before his death.

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[51] According to Zeller, *op. cit* (n. 42 above), p. 104: "Depuis Charles VIII, un *Premier Médecin* dirige le service médicale . . Le Premier Médecin acquiert un droit de surveillance générale sur tous les médecins, chirurgiens et apothicaires du royaume."

[52] See Plancy's *Life* in Sherrington, *op. cit.* (n. 1 above), pp. 161-2

[53] We are indebted to Dr. Karen Reeds for pointing out to us the following passage, which she has translated, from Fernel: "The knowledge, collection, choice, culling, preservation, preparation, correction, and task of mixing simples all pertain to the pharmacists; yet it is especially necessary for the physician to be expert and skilled in these things. If, in fact, he wishes to maintain and safeguard his dignity and authority among the servants of the art, he should teach *them* these things." Quoted by Dr Reeds on p. 40 of her unpublished doctoral dissertation, "Botany in Medieval and Renaissance Universities," (Harvard University, 1975). The Latin text, a quotation from Fernel's *Methodo medendi* in Caspar Bauhin's *Catalogus Plantarum circa Basileam sponte nascentium* (Basel, 1622), appears in note 77, p 233 of her thesis.

While the Daléchamps-Fernel letter here edited and translated may not have had the impact on Lyonnais affairs its author intended, it is nonetheless an interesting historical document in the perennial conflict between physicians and apothecaries. The attitudes expressed towards apothecaries are fairly representative of early modern physicians. Yet the glimpse our letter gives us of professional, institutional, legal and socio-political factors serving to tip the balance in volatile physician—apothecary relationships from mutual accommodation and compromise to outward rivalry and heated denunciations is a welcome reminder of how complex and concretely grounded in human affairs even familiar and recurrent themes in the history of medicine can be.

Appendix—Daléchamps' letter to Fernel

Introduction

Daléchamps' letter to Fernel in behalf of the *collegium medicorum Lugdunensium* is preserved, along with most of the remainder of Daléchamps' correspondence known to survive, in MS Paris, Bibliothèque nationale lat. 13,063. This manuscript contains Daléchamps' own copies of some letters sent by him along with a far larger number of letters which he received. At some undeterminable date (perhaps in the 17th or 18th century) the individual sheets of the letters were assembled into a single volume by being pasted onto narrow strips of paper bound together as a normal book. For the most part this has been carefully done, though a very small amount of text has been lost in some cases. Daléchamps' drafts of the letters he sent are towards the beginning of the volume followed by those received by him. The letters are then generally arranged in groups by correspondent.

The letter to Fernel, like the others by Daléchamps in the collection, is a corrected draft or "minute" prepared by Daléchamps. The fair copy, which was presumably made from the draft and then sent to Fernel has not come to light. The draft version which we here edit and translate has quite a number of changes which we indicate in the *apparatus*. It particularly has many cancellations of words or phrases with emendations written above, as well as a few additions to the text in the margin. These are all in the same hand as is the remainder of the letter. This is perhaps Daléchamps' own hand, though it may well be also that of a scribe. Thus far the question of identifying Daléchamps' handwriting has not been studied. In the present context, however, it is of little importance.

In presenting the letter we have aimed at making the text as readable as possible. It is written in a flowery and verbose language, tending towards long sentences. We have altered the punctuation to aid the reader, breaking up sentences where possible. We have also introduced, where necessary, the modern distinctions between "u" and "v," and between "i" and "j," as well as capitalizing according to modern usage. Editorial additions to the text are indicated by square brackets. In adding a translation we have strived towards literalness, though realizing that the result is somewhat stilted and does not always read as smoothly as it might. Still, we hope it gives an accurate rendering of the original. In addition to the critical *apparatus*, we have also added a few explanatory notes to help the reader in understanding the context of the letter.

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Ad Fernellium

Non sine iustissima quadam fati lege diis immortalibus visum est, illustrissime doctor, ut qui alios multis numeris antecellunt digna suae virtutis mercede apud reges et principes in summo pretio atque honore sint. Etenim, cum ab improbis sceleratisque hominibus bonas artes lacerari sauciarique nos passim videamus, apud reges, quibus pro sua potestate homines id genus coercere licet, istarum esse defensores ac patronos oportuit, qui, cum opus est, et ab iis omnem iniuriam depellant et a principe obtineant, quod ad compescendam horum insaniam necessum est. Id autem, si unquam fuit ab aliquo expectatum, qui apud reges gratia valeret, a te nunc speramus, et poscimus, illustrissime doctor, ut quem optime affectum in medicinam artem tuam ac nostram medicosque pariter omnes certo sciamus, qui sis in oculis christianissimi regis, ab eo nunquam discedas et ab eius maiestate parvo negotio consequi possis, quod vel ignoto iuris et aequitatis princeps amantissimus non denegaverit. Porro, quid nos moverit ut ad excellentiam tuam confugiamus, paucis accipe.

Nuper medicamentarius, huius civitatis natura et ingenio superbissimus ac insolentissimus, occasione sumpta quam pridem captabat, ex libello a pictaviensi medico scripto de seplasiorum fraudibus ac inscitia libellum tanquam apologiam prioris aedidit, quem ad excellentiam tuam mittimus, nefandis ac exe-

crandis conviciis in medicinam et universam medicorum familiam 13^{v} plenum, quemadmodum cognosces, si per otium legere // grave non fuerit. Tam iatrocem contumeliam, cum nos pati aut dissimulare nec possemus nec deberemus, apud iudicem conquesti sumus. Decretum [est], ut impensa periculoque nostro litem persequeremur, sed cum ea sententia iudicis aeternam molestiam nobis pareret, opem tuam implorandam nos potius duximus, quam alendam contentionem eam forensem cuius exitus nullus unquam futurus esset. Itaque amissis causidicorum procrastinationibus tantisque ac tot iudiciorum difficultatibus ac labyrinthis ad te nos convertimus, te respeximus, auxiliumque simul tuum ac collegii parisiensis flagitavimus, ut nos vel artem potius nostram omnium parentem a tam insigni calumnia protegatis. Ac quoniam huius civitatis medicamentarii ob hanc unam caussam ferociunt, quod iis liceat artis, quam profitentur, officinam aperire quantumvis indoctis ac ignaris, nec legibus his statutum sit, ut doctrinae suae periculum faciant, priusquam in eum ordinem admittantur, quod visu ac dictu est multo indignissimum, spretis bonis ac eruditis medicis palam urinas aegrorum inspiciunt; adeuntes variis responsorum ambagibus perfricta fronte deludunt; pharmaca, sanguinis missionem imperant; aegros invisunt; iactant se multo plus de republica mereri quam medicos omnes; confectiones antidotos nullo medico accito parant; nemini, quae in officina servantur, ostendunt, ut rancida, putria, corrupta et inutilia proiiciantur; quid plura omni licentia sibi quidvis permittunt, medicos proterunt ac medicinae invidiam maximam conflant.

14^{r} Aliquando// nobis in mentem venit illorum audaciam retundere ac perfringere. Rogavimus iudices, ut pro more ac consuetudine reliquarum Galliae civitatum et sacrosanctae curiae Parisiensis decreto inscios ac inexpertos ab exercendae huius artis facultate arcerent. Adductis rationibus multis ostendimus qua fide, peritia et diligentia composita delectaque medicamenta esse oporteat in corpus hominis recipienda; severius pharmacopolas ob id legibus adstringendos esse quam alios quosvis opifices; ad officium iudicis potissimum id spectare. Irrita fuerunt haec omnia impulsu pharmacopolarum atque rogatu; intercessit regius procurator. Consules et administratores civitatis oppidum hoc liberum esse vociferati sunt, legibus et statutis huiuscemodi pristinam libertatem adimi, se totis viribus repugnaturos quominus id edicatur. Sic inulta effrenisque manet ac manebit, nisi curae id habeat excellentia tua, seplasiorum Lugdunensium insolentia ac immereundia. Sic medici Lugdunenses vilescunt, non culpa quidem sua, sed eorum qui mores hos pravos emendare debuerunt. Sic honore suo medicina istic fraudatur, libellis famosis vituperatur ac labefactatur, turpissimis conviciis ac maledictis conspergitur et inquinatur, connivente iudice, tolerante magistratu, expostulationibus ac querelis medicorum neglectis.

Quamobrem, illustrissime doctor, nos omnes patronum te in
hac re tutorem ac defensorem invocamus, operamque des,
oramus, ut liberis a Christianissimo rege et D. Cancellario scriptis
magistratus obiurgetur, quod de libelli autore poenas non exigat.
Praeterea, ut tabulas publicas impetres sumptu nostro a D. Can-
cellario, rogamus, quae vetent, nonnisi iuratos sacramento nexos
14^{v} aeditoque specimine pharmacopolas// artem suam exercere, et
cum se gnaros probaverint, nonnisi accersitis praesentibusque
medicis antidotos componere ac commiscere, quantumvis re-
clamet procurator regius ac urbis consules obsistant.

Hoc, si nostra caussa fecerit, excellentia tua, potest autem, si volet et universos nos obligabit plurimum, sempiternaque grati animi memoria devinciet, et labente[m] medicinam sustinebit ac fulciet, et tibi medicisque omnibus, quotquot sunt, et ad quos profecto dedecus id redundat, dignitatem autoritatemque suam procul dubio sartam tectamque tuebitur, as[s]eret[?], conservabit.

Vale.

[OUTSIDE NOTATIONS]

Nostra ad Fernellium.

[Addressed]

Illustrissimo doctori ac Christianissimi regis medico primario D. Joanni Fernellio collegium medicorum Lugdunensium S.P.D.

Apparatus Criticus and Notes to Latin Text

5 sic *post* sint *del. cod.*
hodie *post* cum *del. cod.*

6 oppugnari *del. cod. et suprascr.* sauriari

frequenter *del. cod. et suprascr.* passim

7 'bus' *in* quibus *suprascr. cod.*

8 earum *del. cod. et suprascr.* istarum esse

10 facit *del. cod. et postea suprascr.* satis. . . , *sed istum del. et suprascr.* necessum est

16 facite impetrare queas *del. cod. et suprascr.* haud agre assequi possis, *sed del.* haud agre assequi *et add.* parvo negotio consequi *in marg.*

nemine fuerit *del. cod. et suprascr.* ignoto ac, *sed postea del.* ac

17 non *suprascr. cod.*

sed *del. cod. et suprascr.* porro

19 medicamentarius: cf. Plinii HN, XIX, § 110.

21-2 seplasiorum: cf. Plinii, HN, XVI, § 40-1; XXXIV, § 108.

25 molestum *post* legere *del. cod. et add.* grave *in marg.*

26 contumeliam *corr. cod. ex?*

28 decretum *corr. cod. ex* decrevit

ille *del. cod. post* decretum

29 iudicis *post* ea *del. cod., sed ipsum suprascr. post* sententia

30 accusat *del. cod. et suprascr.* pareret

31 eam *suprascr. cod.*

32 neglectis *del. cod. et suprascr.* amissis

34 subterfugiis *del. cod. et suprascr.* labyrinthis

35 p . . . *del. cod. et superscr.* flagitavimus

35-6 vel . . . parentem *cod. add. in marg.*

42 literatis *del. cod. et suprascr.* eruditis

43 que *post* adeuntes *del. cod.*

43-4 perfricta fronte *cod. add. in marg.*

45 *verbum obsc. del. cod, et suprascr.* se multo

46 nullo *corr. cod. ex* nullos

47 rancida putria corrupta sunt *del. cod. et suprascr.* servantur. *Cf. infra*

48 vetus [?] *del. cod. et suprascr.* et

49 sibi quidvis permittunt *cod. add. in marg.*

(*bis*)

50 permittunt *suprascr. cod., sed del. et postea add.* maximam

53-4 et sacrosanctae . . . decreto *cod. add. in marg.*

56 quibus *post* oporteat *del. cod.*

57 maiora [?] *post* recipienda *del. cod.*

59-60	impulsu . . . rogatu *cod. add. in marg.*
61	oppidum hoc *suprascr. cod.*
62	oppidum hoc *del. cod. et suprascr.* vociferati sunt
63	edicatur *corr. cod. ex* edicaretur
64	effrenisque *superscr. cod.*
	ac *superscr. cod.*
	que *post* manebit *del. cod.*
67	mores hos *corr. cod. ex* morem hunc
	me *post* sic *del. cod.*
70	connivente iudice *corr. cod. ex* coniventibus iudicibus
72	a te *post* omnes *del. cod.*
73-4	obsecramus *del. cod. et suprascr.* operamque des oramus
	verbum obsc. superscr. cod. et del.
74	rege *corr. cod. ex* reget[?]
	et D. Cancellario *cod. add. in marg.*
75	magistratus obiurgatur *suprascr. cod.*
77	quae *corr cod. ex* qui
	promulgent ac iubeant *del. cod. et suprascr.* vetent
	que *post* sacramento *del. cod.*
	ac *post* nexes *del. cod.*
78	'que' *in* aeditoque *suprascr. cod.*
79	dignos *del. cod. et suprascr.* gnaros
81	vero[?] *del. cod. et suprascr.* ac
	repugnent *del. cod. et suprascr.* obsistant
82	fecerit *corr. cod. ex* perfecerit
83	sempiterna *corr. cod. ex* aeterna
84	labente *cod., correximus*
85-6	et ad . . . redundat *cod. add. in marg.*
87	asseret *cod. non liquet, coni.*

TRANSLATION

13^{r}

To Fernel

Not without a certain very just decree of destiny has it seemed good to the immortal gods, most illustrious doctor, that whosoever distinguish themselves above others with respect to many things are held, with a reward worthy of their virtue, in the greatest esteem and honor by kings and princes. For truly, since we see on all sides the *bonae artes* torn asunder and dealt mortal wounds by wicked and impious men, it is necessary that there be defenders and patrons of these arts in the household of kings, to whom it is permitted, by virtue of their power, to restrain such wicked men. When necessary the patrons both thrust out all wrongdoing from the arts and obtain from the prince whatever is required to curb the insanity of such men. Moreover, if ever such action was to be hoped for from anyone who has been in favor with kings, we hope for it from you now; and we beg, most illustrious doctor, that we may know with certainty that you are someone well disposed to both your and our own medical art, and toward all physicians alike: you who are beloved by the most Christian king, you who never depart from him, you who are able to obtain with little difficulty from his majesty what, even to one ignorant of law or justice, the most affectionate prince will not have denied. In turn, accept in brief what has moved us to seek refuge in your excellency.

Recently a drug vendor of this city (by nature and character most arrogant and insolent), having seized the opportunity for which he was waiting a long time, because of a pamphlet written by a Poitou physician on the frauds and quackery of the Seplasians himself published a pamphlet (which we send your excellency), as an apology to the first, filled with heinous and detestable insults against medicine and the entire family of physicians. 13v You will learn just how if it is not too oppressive to read for leisure.

Since we could not, nor ought we have, endured or disguised such medical insults, we complained bitterly to a judge. It was decided that we might institute legal proceedings (though at great expense to ourselves), but since that judicial opinion seemed an unending trouble to us, we decided to beg your assistance, rather than promoting this public contention of which no end might ever come. And so having thrown off the procrastinations of lawyers and so great and so many judicial difficulties and labyrinths, to you we have turned, to you we have looked, and have sought at once your aid and that of the Paris college to protect us (or, rather, our art, parent of all) from so terrible a slander.

And since then the drug vendors of this city have become unruly because of this one event. Wherefore they are permitted, howsoever unlearned and ignorant, to open a work shop of the skill which they profess. Nor has it been established by these laws that their learning be tested, before they might be allowed to their position—which is most disgraceful to see and to say. Although having condemned good and learned physicians, they openly examine the urine of the sick; casting aside all shame, they delude those approaching with various circumlocutions of responses; poisons, the letting of blood they order; they visit and care for the sick. To many they boast of themselves to deserve more from the republic than all physicians. They prepare concoctions as antidotes without calling a physician. They show to no one the things that are used in their shop, so that rancid, putrid, corrupt and useless things are brusquely dispensed. What is more with every license they permit themselves anything whatever; they abuse physicians, and stir up the medical profession's great ill-will.

14^{r} Now at last // it came into our mind to blunt and shatter the audacity of those men. We asked judges whether according to both the precept and customary law of other French cities and the decree of the sacrosanct Parisian curia, they might prevent the ignorant and incompetent from the possibility of exercising their trade. By using many arguments we have shown how medicaments, fit to be received into the human body, ought to be composed and selected through experience and diligence; how drug vendors should be legally constrained more severely than other artisans whatever; and that most especially pertains to the office of a judge. By the influence and entreaty of the drug vendors all these things have been in vain; the king's procurator intervened. The city consuls and administrators exclaimed this town to be free: they declared their original liberty snatched away by laws and statutes of this sort, and that they would fight with all their strength so it would not be decreed. Thus the arrogance and unworthiness of the Lyonnais Seplasians remains and will remain unpunished and unbridled unless your excellency attend to it. Thus the Lyonnais physicians appear vile, not indeed through their own fault, but through that of those who ought to have altered these perverse practices. Thus medicine is thereby cheated of its honor: by slanderous pamphlets it is censured and weakened; by most foul reproaches and curses it is bespattered and defiled, with a conniving judge, with a tolerating magistrate, and with disregard for the physicians' expostulations and complaints.

For this reason, most illustrious doctor, we call upon you, protector, to be guardian and defender in this matter, and we pray you to bestow your attention in order that by unimpeded writs from the most Christian king and the Lord Chancellor the magistrate be rebuked because he has not exacted punishment of the author of the pamphlet. Moreover, we ask you to obtain from the Lord Chancellor (at our expense) public records, which allow drug vendors to practice their art only after being bound by a sworn oath, and after proof has been produced; // and when they
14^{v} prove themselves skilled, they may allow drug-vendors to make up and to mix antidotes, only when physicians are present; howsoever much the king's procurator might call out and the city consul may resist.

If, for our sake, your excellency might do this thing, he can, moreover, if he be willing, both place us all exceedingly in his debt and bind us together through an everlasting memory of gratitude, and sustain and support a tottering medicine. For your sake and for all physicians howsoever many there are (and to whom truly disgrace is present in excess in this affair) he will certainly preserve his dignity and authority and will support and maintain a structure in good repair.

Farewell.

[OUTSIDE NOTATIONS]

Our Letter to Fernel

[Addressed]

The Lyonnais College of Physicians sends greetings to the most illustrious doctor and first physician of the most Christian king, Lord Jean Fernel.

MEDICO-HISTORICAL NEWS AND ACTIVITIES

CORRESPONDENCE AND REPORTS

TEACHING AND RESEARCH IN THE HISTORY OF MEDICINE IN CHINA

For some years there has been an arrangement between Peking Medical College (PMC) and the Medical Faculty of McGill University known as the Norman Bethune Exchange Professorship.[1] Every other year, two McGill professors visit China and, in the intervening years, two from PMC visit Canada. Over a 3 to 4 week period, the Bethune Professors go to a number of medical centers, give lectures, and have conversations with their counterparts in the host country.

In September and October of 1978, Dr. Raymond Prince, Professor of Transcultural Psychiatry and Associate Dean for Graduate Education, and I went to China on this exchange and I had an opportunity to enquire concerning teaching and research in the history of medicine as it is being pursued in China at the present time. Information on such a short visit was scanty and hard to come by—still harder to verify upon returning to North America. What follows is a report from our notes. Perhaps future visitors will have a chance to revise, correct, and enlarge upon this tentative information.

Our Chinese informants invariably distinguished between the history of "Western" medicine, and that of traditional Chinese medicine.[2] This distinction is natural—they have two very different histories. Moreover, in their concepts and institutions, these two systems of medicine are still being practised separately. The very fact that so much is said about the need for "integrating" the two is an indication of how separate they are in the consciousness and social fabric of China.

From the point of view of historiography, there are also differences in the motives behind the teaching and research that go into each. For political and nationalistic

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[1] Dr. Norman Bethune, a Canadian surgeon, worked for a time in the 1930s at the Royal Victoria Hospital, a teaching hospital of McGill University. He subsequently served Loyalist troops in the Spanish civil war and Mao's Red Army in China, where he died in 1939. Through Mao's memorialization of him, Bethune became a symbol of selflessness and internationalism to the Chinese people. See Roderick Stewart, *Bethune* (Toronto: New Press, 1973).

[2] "Western" and "Chinese," as adjectives applied to systems of medicine, are increasingly frowned upon, terms like "Cosmopolitan" and "Asian" being preferred, particularly by anthropologists sensitive to historical accuracy and cultural connotations. While I agree with such scruples, I have retained this older terminology largely because it was the language actually used repeatedly by my informants in different parts of China It may be that they were using English terms which they felt would be most meaningful to me, but I rather had the impression that they too thought in such terms precisely *because* they convey nationalistic overtones. See Fred L. Dunn, "Traditional Asian Medicine and Cosmopolitan Medicine as Adaptive Systems," in *Asian Medical Systems: A Comparative Study*, ed. Charles Leslie (Berkeley: U. of California Press, 1976), pp. 133-158.

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reasons, a keener interest in, and stronger support for, traditional medicine is clearly manifest.[3] Besides, sources are much more readily available and the field is largely undeveloped. There are for the Chinese plenty of opportunities for original scholarship, and in one's own language.

Although we were not told that there is a well-developed collection specifically devoted to the history of medicine anywhere in China at the present time, we caught a glimpse of the possibilities for research during visits to the National Library in Peking, and to the main Municipal Library in Shanghai. In both places, particularly in the latter, it was clear that large collections of manuscript and printed documents and books, dating back many centuries, have survived the vicissitudes of war and civil strife.

In Peking, we were shown a medical book, printed, on paper, and dating from the 13th century. In Shanghai a manuscript, said to be from around 500 A.D., was also written on paper. What was particularly impressive was the relative ease with which our guides—physicians and laymen, but not historians—could read these texts. It dramatized for us the celebrated continuity of China's civilization.

We were also impressed by resources of another kind—the rich possibilities that still lie buried in tombs around the country. North American tours of Chinese art objects have publicized the richness of recent archeological discoveries. For historians of medicine probably the most interesting has been the 2,000-year-old mummy of a wealthy noble lady found in an amazingly well-preserved state in 1972. We visited the museum which now houses her, and her treasures from a Han tomb, near Changsha in Hunan Province. I was intrigued to learn from the guide that, among the manuscripts found in the tomb was one on regimen. It considered, as the most important variables, weather, diet, rest, emotions, and exercise.

A striking example of archeological opportunities which still lie ahead is to be found at the Ming tombs, just north of Peking. Of the dozen or so tombs known to exist only one has been fully excavated and almost all the rest are as yet completely untouched. Even more extensive relics await excavation at Sian, the ancient capital of China, in Shensi Province. Undoubtedly, as this rich mine is unearthed, more things of medical interest will be uncovered.

There is still one other reason why the history of traditional medicine is especially favoured and this could influence the way it is pursued. Historical research still holds out the promise of practical, utilitarian results for present-day practice. New remedies, a deeper understanding of some aspect of pulse lore, or a clearer exposition of a theoretical point might be revealed. The thought and experience of the ancients is a reasonable place to search for useful knowledge in a medical system whose efficacy is certified in the minds of its users more by its cultural roots than by its laboratory credentials.

For all of these reasons, the history of Chinese medicine is well entrenched in the medical teaching of schools of traditional medicine. Indeed, several informants

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[3] At least one informant saw the history of Western medicine less as a unitary development and more as a mosaic of nationalistic rivalries. He observed that the Germans emphasized Koch, the French, Pasteur, the English, William Harvey, etc., in such a way as to bewilder the Chinese onlooker. But our commentator in this case was himself a European émigré from before World War II, and also not an historian of medicine. I did not find out whether this view was shared by others.

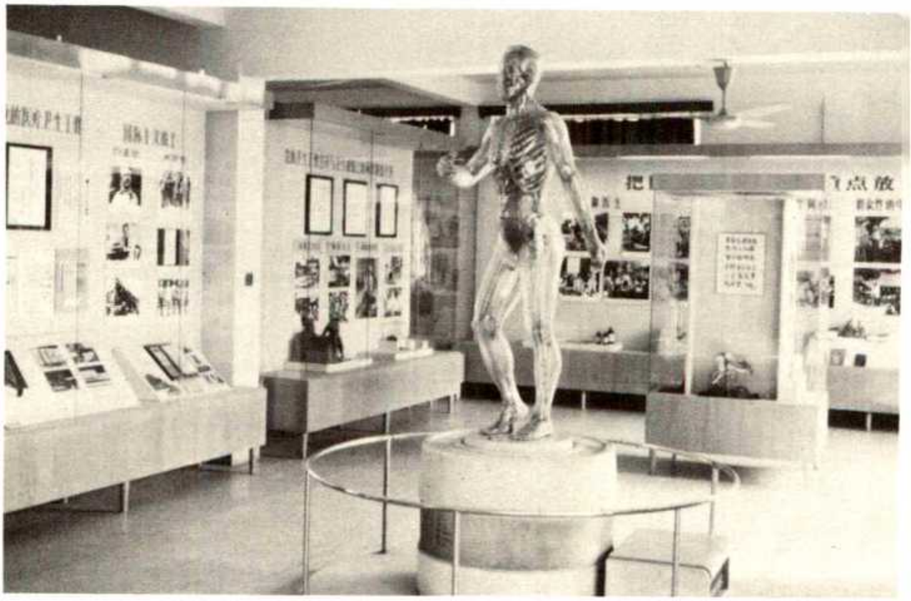

Figure 1. One of two showrooms devoted to the history of Chinese Medicine, Academy of Traditional Medicine, Shanghai.

reported that it is almost universal in these institutions. We also had the impression that, in those schools of Western medicine that did teach history, the history of traditional medicine was more prominent than the history of the Western medicine.

This is not unreasonable if one takes into account that all medical schools in China, whether traditional or Western, must use 30% of the five years of curriculum time to teach the other system in order to integrate the two kinds of practitioners.[4] Within the time spent on traditional medicine by Western-style schools, the history of traditional medicine is a useful vehicle for acquainting students with the subject. For the same reason, traditional schools would like to teach the history of Western medicine but, we were told, there is rarely anyone able to teach it.

The amount of teaching of the history of medicine in the medical schools depends on several factors. The duration of the curriculum, and broad policy matters like the 30% rule mentioned above, are established centrally by the Ministry of Health. Certain subjects are made mandatory; others are permissible if the school has the personnel, facilities, and desire to include them. Medical history, Western and Chinese, is one of these permissible subjects. If a school decides to teach the subject, the school determines the number of hours and the subject becomes required for all students. There do not seem to be "options" or "electives" for students in this or any other subject so far as we could tell.

Before the Cultural Revolution, the Department of the History of Medicine at

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[4] For a description of medical education in 1978, see D. G. Bates, "Medical Education in China After the Gang of Four," *Canadian Medical Association Journal*, 1979, *120*: 1578-1582.

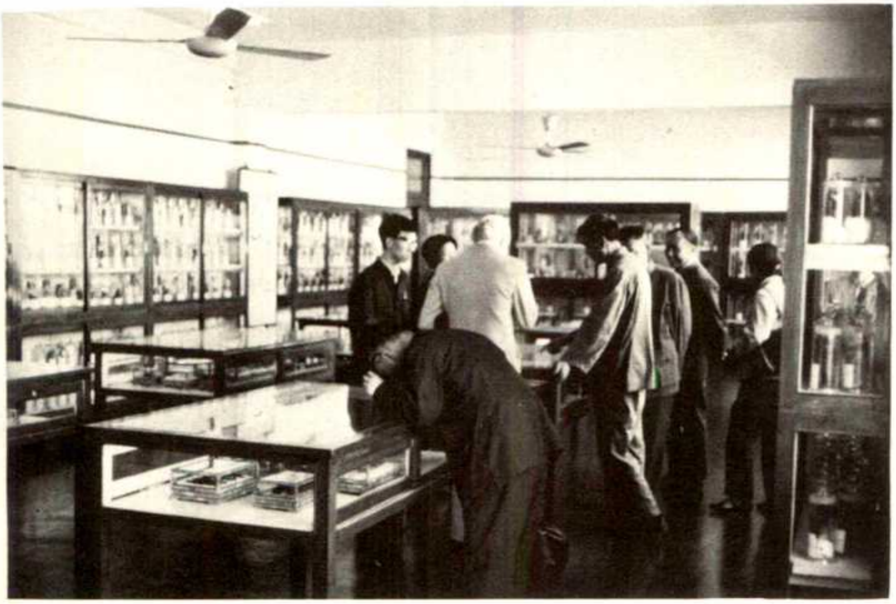

Figure 2. Collection of Chinese medicinal herbs, Academy of Traditional Medicine, Shanghai.

PMC taught 38 hours and students also took a two-hour exam. Time was divided evenly between Chinese and Western medicine. Dr. Cheng Chi Fan, chairman of the department, hopes that a course of similar length for fourth-year students will be re-introduced into the new five-year curriculum. What the proportion of Western to Chinese history will be, however, is not yet decided.[5] Meanwhile, Dr. Cheng and a colleague have been giving occasional lectures to students in the Academy of Chinese Medicine.

Research in the history of Chinese medicine is currently confined largely to the half-dozen or so centers where one or two scholars are actively engaged.[6] Peking, Shanghai, Harbin, Sian, and Kuangchou came particularly to the minds of our hosts. In Shenyang, there is a research institute of traditional Chinese medicine where work is presently being done on newly found relics, including herbal and mineral medicines, from the 6th century, A.D. In Shanghai we visited the local Academy of Traditional Medicine which boasted a very large display on the history of that medicine and a room full of exquisitely prepared specimens of the plants used in herbal medicine, organized according to their therapeutic actions.

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[5] All medical students do take another course in history—the history of the Chinese Communist Party—as part of a range of subjects which one informant labelled "political medicine."

[6] Recent monographic historiography of Chinese medicine, written in China, is reflected in the bibliography of Pierre Huard and Ming Wong, *Chinese Medicine*, transl. Bernard Fielding (London: World University Library, 1968). For a list of recent literature on the same subject, produced largely in European languages in the West, see Shahid Akhtar, *Health Care in The People's Republic of China: A Bibliography of Abstracts* (Ottawa: International Development Research Centre, 1975), pp. 22-32.

The distinguished historian of medicine, Dr. Lee T'ao, who died in 1959, had been at PMC. His outline of the history of Chinese medicine up to 1949 is now being revised to become a basic text. In addition, a slim volume on the subject, to be used for teaching purposes, has just been published by members of the Academy of Chinese Medicine, Peking.[7]

Before the Cultural Revolution, there was a journal on medical history which became combined, in 1958, with a periodical on public health. It thereafter went through various vicissitudes before being suspended in 1963. At present, no journal devoted to medical history is being produced in China though there are hopes to restart one soon. Many historical articles do appear, as one might expect, in the various journals of traditional medicine.

Among those now doing research, there seems to be no clear pattern of background or training. Some have come from traditional medicine, some from Western medicine, and still others from general history. The interpreter for my lectures in Peking, Dr. Ma Kan Wen, was trained in traditional medicine, is a member of the Academy in Peking and also a research associate in the PMC Department of the History of Medicine. He has published articles on the history of Western and Chinese medicine and obviously is very familiar with both. Conversely, we understood that Dr. Cheng, chairman of the department at PMC, is trained in Western medicine.

Both men are working on the two systems of medicine comparatively. Dr. Ma is chiefly interested in Chinese medicine of the Ming and Ching dynasties, asking particularly why the rise of scientific medicine in the West did not have a counterpart in China. He is also doing a dictionary of inventions, discoveries, and the origins of medical terms. Another project is to translate the works of Hippocrates from the Adams English translation into Chinese. Dr. Cheng is translating May's English edition of Galen's *De usu partium*[8] and comparing the anatomical knowledge contained in it with that reflected in some Chinese texts of comparable antiquity. Bridging the language barrier directly from Latin and Greek to Chinese is not, we were told, within the competence of those presently engaged in medical history studies.

There are also other projects and other people in the Department at PMC. For instance, a long-time undertaking is the translation of Castiglioni[9] from English into Chinese so as to provide students with greater access to the history of Western medicine. The translation was begun by Drs. Cheng and Lee T'ao in 1954 and just ready to be printed when the plates for it were smashed during the Cultural Revolution.[10] Now it is being prepared again, some further improvements in the text

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[7] *History of Chinese Medicine* (Shanghai: Science and Technology Publishing Co., 1978), 71 pp. (in Chinese).

[8] *Galen On the Usefulness of the Parts of the Body* . . ., transl. from the Greek with an introduction and commentary by Margaret Tallmadge May, 2 vols. (Ithaca: Cornell U. Press, 1968).

[9] Arturo Castiglioni, *A History of Medicine*, transl. and ed. E. B. Krumbhaar (New York: Alfred A. Knopf, 1941). I do not know if they are using the 2d ed. rev., 1958, for the more recent work.

[10] During that time, and particularly during the more extreme phase under the influence of the Gang of Four, intellectual activities of many sorts were discouraged or suppressed. The history of medicine did suffer during that era, but, in the opinion of our hosts at PMC, no more than many other subjects, and the history of western medicine no more than Chinese.

Figure 3. Department of the History of Medicine, Peking Medical College, Peking. The Chairman, Dr. Cheng Chi Fan, is in the back row center.

having been added more recently. The history of Western medicine is also being pursued by Ran Fan Fu, a graduate of PMC. He is working in 19th- and 20th-century physiology. Sung Chi Qi, on the other hand, is working on both Western and Chinese pharmacy. She is a graduate of the Faculty of Pharmacy at PMC, and is preparing an outline of the history of Western pharmacy while also doing research in Chinese materia medica. Kao Ming Xuan majored in law during his college undergraduate years. He also took general history. He is focussing on the social aspects of Chinese medicine, particularly legal medicine and medical jurisprudence. These last three individuals, all members of the Department at PMC are "medical history workers." They are not doing any teaching.

As for the training of future researchers, the only program we heard of was one just being implemented at the Academy of Traditional Medicine in Peking. In the fall of 1978, 5 graduate students (2 trained in Western medicine, 3 in Chinese), began graduate work in the history of Chinese medicine. They will undergo three years of training to become primarily researchers, not teachers, in the Academy. Support for this type of education has only been forthcoming since the fall of the Gang of Four but now seems quite solidly based and at a relatively substantial level.

If this experiment works out in Peking, it will be extended to other centers around the country. This might seem surprising in a country with so few economic resources and an acute shortage of trained physicians. But it must be remembered that the purposes of such studies are as much utilitarian as academic, the hope being that new discoveries will be made regarding useful practices embodied in the lore of Chinese medicine.

Although still partially in the planning stage, the training program has been tentatively designed in two phases. A first year is devoted to basic and life sciences in Western medicine, the ancient classics in traditional medicine, readings in ancient literature, and studies in archeology and philosophy. From the second year on, the student will write a thesis under the guidance of a teacher.

At the moment there is no commitment to graduate studies in the Department of the History of Medicine at PMC, but Dr. Cheng hopes that this might be possible in 2 or 3 years' time and that Western medicine might be included.

Of the cultivation of the history of medicine by practising physicians we learned almost nothing. On more than one occasion, however, some physician or health worker at a dinner would comment on his own interest in the subject and display varying degrees of acquaintance with the field. Perhaps the best evidence that there is an interest in the subject outside of academic circles is the existence of the Chinese Medical History Society which is associated with the Chinese Medical Association. However, an academic, Dr. Cheng of the PMC, is currently the Society's chairman.

So much for the details, such as we know them, concerning teaching and research in the history of medicine in China. I shall end this survey with a more general impression which a three-week visit left upon me.

As representatives of a 150-year-old medical school in an industrially advanced country, we were often regarded as coming from a much older society, particularly since the conversation often turned to the relatively young institutions of China, many of them younger than the 29-year-old Republic itself. Everything is new; everything is just beginning. Sometimes we felt positively venerable as well as comfortably decadent.

But there were other times when these conceits were rudely exposed. The longer we were in China, the more conscious we became that we were witnesses to the oldest continuous civilization merely going through its latest metamorphosis. Then we became aware that our own history was not only painfully recent, but mostly borrowed as well. Even in Europe, the North American finds enough to embarrass his historical sensibilities. But in China, the civilized European too must regard himself as something of a parvenu.

As East and West begin to meet on an unprecedented scale, there will no doubt be many benefits derived on either side. But, it seems to me, it is we historians particularly who have much to gain from the work of our Chinese colleagues. The plough they are using is new, but the ground they are tilling is fertile, and the past which they are harvesting will surely enrich us all.

Don G. Bates
McGill University

THE ARIZONA MEDICAL HISTORY PROJECT

In July, 1977, the Arizona Medical History Project was created to research and publish an original historical study of the medical profession in twentieth century Arizona. A decade earlier, Frances Quebbeman's *Medicine in Territorial Arizona* had appeared, covering the history of medicine in early Arizona until statehood in 1912. The new project had several goals: first, to continue in narrative fashion the story of the development of the medical profession in Arizona down to 1975; second, to look at the life career patterns of individual physicians who have practiced in Arizona during the twentieth century; third, to explore the relationship of the medical profession to the larger community; fourth, to identify and analyze issues and problems confronting the medical profession during this period. The object of the project was to conduct original documentary and field research, culminating in an original monograph for publication with a university press.

The study of contemporary history is often related to the study of events or happenings; in this instance, the project was designed to look at the structure of a professional group over a period of time, and to see how this group fared during a period of intense social change. In 1900, Arizona was the last frontier in the United States, an area just fresh from Indian-settler wars, yet seventy-five years later, Arizona was in the forefront of the so-called Sunbelt, a mecca for light industrial development and manufacturing, agricultural produce and stock-raising and tourism and retirement. How had the physician and surgeon adjusted to this period of rapid social, economic, and professional change? How had the successive waves of migration from the East and Midwest affected Arizona's medical community?

It was decided to make intensive use of oral history interviews to supplement written and printed documentary materials which were being collected and identified as source material for the project. To date, more than 170 interviews have been completed, logged, and typed. These have primarily been with doctors of medicine, although relevant hospital and medical support service personnel have also been contacted, as well as business, legal, and staff persons related to the medical community. These interviews were free structured in form, but each interviewer sought to identify major issues and areas in which the physician could be used as a knowledgeable informant. A distribution of physicians according to specialization, location, period of service (by decades), and other criteria was made in order to assure a collection of memories and impressions that would be representative. The project was not interested in doing a sociological type of sample, but rather used the idea of participant observation to help understand the evolution and development of structures and issues within the medical profession.

The project was made possible by a grant from the Robert S. Flinn, M.D. Foundation of Arizona, to the Arizona Academy of Medicine of the Maricopa (Phoenix) County Medical Society. Professor G. Wesley Johnson of the Department of History, University of California, Santa Barbara, was appointed to serve as the Research Director of the project and to complete the monograph. Dr. Johnson has previously investigated professional groups in other fields, and has studied the growth of city and community on three continents, including the growth of professional groups and activities in West Africa. He also serves as the current director of the Phoenix History Project, a five-year effort to research and write a major work on the history of Arizona's capital. John W. Kennedy, M.D., former editor of the state historical society's *Arizona Medicine*, and well-known Arizona historian of medicine, agreed to serve as chairman of an advisory board to oversee and advise on the project. Nine prominent Arizona physicians were appointed to this board and have met quarterly to furnish ideas, suggest issues, and to serve as a catalyst for the project. Marilyn Burbach served as the project administrator, and a staff of four interviewers, two research assistants, and a typist, plus numerous volunteers from the medical society's auxiliary, kept the project on schedule.

Basic documentary and oral history research was completed on March 1, 1979, and the project is currently in the write-up phase. It is hoped that the final result will be larger than a regional or provincial case study of the medical profession in the West, and will help shed light on the problems of the development of the profession in the nation. Few attempts have been made to conduct a large project of this type using oral history evidence; if the project's outcome warrants it, the exercise might be a valuable guide to others who are interested in examining the profession in recent and contemporary times. Traditionally, most studies of this genre have awaited the passage of time, but today's world often does not leave behind adequate records for reconstructing the fast pace of change.

The study is to be divided into three major parts. Part One will be a straightforward narrative of the growth of medicine in Arizona from 1900 to 1975, divided into three periods: from frontier to city, depression and war, and medicine and the metropolis. Part Two is entitled, "A Profile of the Medical Profession in Arizona," and seeks to analyze the origins, education, experience, and practice of past and present Arizona physicians. It also looks at the personal and community interests of the physicians, and their perception of change.

Part Three focuses on a number of case studies drawn from issues, institutions, and special situations in Arizona. For example, the importance of mining towns to the practice of medicine, especially in recruiting well-trained physicians to locate in a frontier state. Or the particular problems of providing medical care for the native American Indian population in Arizona, some on reservations, some in urban areas. Or the era of health seekers, when Arizona was a favorite location for tens of thousands suffering from tuberculosis, and the sanitoriums created by Arizona physicians to cope with this invasion. Other subjects in the case studies include the growth of hospitals and clinics, the development of public health, the growth of the state and county medical societies, an analysis of specialized fields of practice and research institutes, founding a medical school in Arizona in the 1960s, the medical profession and politics, the case of the rural doctors, and an examination of health care and support services. It is also hoped that a survey of patient attitudes toward the medical profession currently being done independently may be incorporated into the study.

This report is based on the presentation made by Professor G. Wesley Johnson, University of California (Santa Barbara), at the 52nd Annual Meeting of the American Association for the History of Medicine, Pittsburgh, Pa., May 3, 1979.

BIBLIOGRAPHY OF THE HISTORY OF CANADIAN MEDICINE

Dr. Charles Roland, of McMaster University, is preparing a bibliography of secondary sources in the history of Canadian medicine and health care. The scope is intended to be as broad as possible: included will be theses and published material of any kind. The bibliography is intended to encompass the entire time span of

Canadian history, including references to aboriginal medicine; geographically, the present boundaries of Canada will mark the limits of the project.

All of the common sources for references have been or will be consulted, including the complete runs of Canadian medical and historical publications, journals devoted to medical history, provincial historical journals and similar periodicals. Less obvious souces to be considered include journals published outside Canada, publications of regional or local historical societies, and journals, books or chapters in books whose titles may not suggest the inclusion of material appropriate for listing in the bibliography.

The aim of the project will be not only to provide a printed checklist, but also to store and cross-index all references so that pertinent information will be available to scholars on request. It is also intended that the project will be maintained and expanded continuously once the bulk of the data is on file. Readers are requested to submit full bibliographic details (and reprints or xerox copies if possible) of any items thought to be suitable to Charles G. Roland, M.D., Hannah Professor of the History of Medicine, 3H56-JSC, McMaster University, Hamilton, Ontario L8S 4J9, Canada.

TURKEYS AND BRUNONIANISM: A BRIEF NOTE

In 1838, Elizabeth Cullen Brown, only surviving offspring of John Brown (1736-1788), the famous Scottish physician, assembled fourteen folios of material belonging to her father. These papers were dispatched to Thomas J. Pettigrew (1791-1865), surgeon and author, who was at the time composing his *Medical Portrait Gallery* (4 vols., London, Whitacker, 1840). Elizabeth had met Pettigrew several years earlier while gathering subscribers for her novel *Passion and Reason* (4 vols., London, Hookham, 1832) based in part on her father's life.

Along with the papers, Elizabeth sent a lengthy letter entitled "Reminiscences of Dr. John Brown, facts respecting him, and allusions to the want of facts and misrepresentations of him, by his first biographer Dr. Beddoes." The document, now MSS 5173, is located at the National Library of Scotland. Towards the end, Elizabeth mentions the case of a young turkey, rescued from death by the Brunonian doctrine. "This occurred at the house of a friend of my father's," she writes, "where he was dining. The fowl was brought into the dining room apparently dying. By my father's desire, fifteen drops of laudanum were poured down its throat. The season must have been winter," Elizabeth continues, "for there was a great fire, and the *patient* was laid on the rug before it. With my sister, I watched the result which was no more than (the turkey) slumbering throughout the whole evening." Yet, she concludes, the animal recovered and "grew up one of the finest turkeys of the gentleman's rearing." Later, John Brown was "invited to eat of his *own works* which I (Elizabeth) conceived to be so *barbarous* that I could not have eaten it though I had been starving." Sic transit gloria mundi!

GUENTER B. RISSE, M.D., Ph.D.
University of Wisconsin

THE TEACHING OF MEDICAL HISTORY TO COLLEGE UNDERGRADUATES IN THE UNITED STATES AND CANADA

Report of a Survey Made in 1977

In 1974, the American Association for the History of Medicine established an ad hoc Committee on Education. During the next few years, this committee explored the feasibility of certain projects which might be helpful to those interested in the teaching of medical history. In 1977, the committee was composed of Chester Burns, Gert Brieger and Dora Weiner. The apparent growth of courses at the college undergraduate level was noted, but the committee did not know the extent of this growth.

In October of 1977, 1,857 questionnaires were mailed to departments and individuals in the United States and Canada who might have information regarding the teaching of courses in medical history to college students. This list included all of those named in the Directory of History Department Chairmen published by the American Historical Association in 1976, all history departments in the major universities and colleges of Canada, and a group of faculty in history of medicine or history of science departments in both countries who might be teaching college undergraduates.

The response was unexpected. Definitive answers were received from 1,176 institutions in the United States and 33 institutions in Canada. More than fifty course outlines and reading lists were received. The committee had some difficulty in reaching a decision about the best way to report the information. The group tried to categorize and analyze with the hope that a more synthetic, interpretative report could be prepared. Realizing that such a digest was becoming very problematic, the decision was made to prepare a descriptive report.

History of medicine "courses" were defined as self-contained, systematic approaches to the scientific, practical, or social features of medicine as they have developed in Western European, or American cultures. For the academic year 1977-78, history of medicine courses were being taught or planned at six Canadian universities and seventy-two American universities. Abstracts and selected outlines of these courses are included in the report.

These abstracts and outlines demonstrate a broad range of approaches to teaching history of medicine at the college level. They are rich with suggestions about course objectives, teaching strategies, appropriate readings, and various ways of evaluating effectiveness. Most teachers of medical history courses—both veterans and neophytes—can benefit from a study of the outlines. Those wishing to develop new courses can find many helpful ideas.

Some teachers have incorporated the historical aspects of medicine into history of science survey courses or history of biology courses. Others have developed specialized courses involving particular aspects of the history of the health care professions, or have offered courses involving the history of medicine into humanities programs. A number of these teachers are identified in the report so that individuals interested in their approaches may contact them directly.

A surprising number of college teachers reported that a definite but limited amount of information about the history of medicine had been incorporated into survey courses in world or Western civilization, courses in the social history of Europe or the United States, health sciences or health education courses, and a variety of courses in biology, medical anthropology, medical sociology, social psychology, and gerontology.

To help cover the cost of mailing and printing, the American Association for the History of Medicine is charging $5.00 for each copy of the report. Checks should be made payable to *American Association for the History of Medicine*, and reports should be requested from Dr. Chester R. Burns, Institute for the Medical Humanities, University of Texas Medical Branch, Galveston, Texas 77550.

CHESTER R. BURNS
For the Committee on Education of the American Association for the History of Medicine

PUBLIC HISTORY

During the past several years, at a number of American universities, a new emphasis in the study of history has emerged. This is called Public History and it stresses the idea of preparing students by teaching and directed research to enter the world of practicing history in non-university situations. In other words, the creation of a new professional person, the Public Historian, a person trained in multiple skills to work in government, industry, the media, historical societies and museums, and elsewhere.

A new journal is now being published at one of the graduate programs in Public History entitled *The Public Historian*. It seeks to publish articles and essays from practicing historians who are doing research and working outside of teaching. Far too often in the contemporary United States, history has been limited entirely to campuses and associated entirely with teaching; a significant trend is now in operation to broaden the historical profession, and the new journal hopes to be a clearing house and focus for the development of Public History. The journal is published by the Graduate Program in Public Historical Studies of the University of California, Santa Barbara campus, and involves the graduate students in that program in its editing and publishing. The model is perhaps that of the law review. The journal is directed and edited by a faculty committee of the University, with G. Wesley Johnson and Thomas Fuller as editor and associate editor.

The new journal has published articles by Richard Hewlett, chief historian of the Department of Energy, David Trask, historian of the State Department, David Clary, historian of the U.S. Forest Service, and other professional practitioners of history. It publishes book reviews, notes and comments, and a letters to the editor section. It is published quarterly and subscriptions or other information can be obtained from *The Public Historian*, Department of History, University of California, Santa Barbara, 93106.

The journal is interested in publishing essays or articles on medical history which relate the subject to the problems of the practicing historian.

F. N. L. POYNTER, 1908-1979

It is with deep regret that the *Bulletin* has learned from the Trustees of the Wellcome Trust of the death on 11 March 1979 of Dr. Noël Poynter near his home in Montvalent, Lot, France.

Noel Poynter joined the Wellcome Historical Medical Library in 1930 as an Assistant Librarian, became Chief Librarian in 1954 and in 1964 was appointed Director of the Wellcome Institute for the History of Medicine, a position which he held until his retirement in 1973. At that time he was saluted in the *Bulletin* in a short congratulatory essay* which recognized his contributions to scholarship—the books he wrote, co-authored or edited, and his many papers, lectures and bibliographies, besides his scholarly editing of *Medical History* and the organizational and editorial skills he displayed in the service of British and international congresses on the history of medicine and pharmacy. Four sentences from that editorial bear repeating now. "The University of Kiel has recognized his achievements by awarding him its honorary M.D. It is significant that this should have been a cross-Channel distinction, for right up to the great Congress of 1972, Poynter has been an international as well as a national figure. It is undeniable, none the less, that his greatest services, in addition to his own contributions to scholarship, have been rendered in London to the scholars of many lands. Whether he served Walter Pagel, on the scene, or Owsei Temkin, visiting from America, Noël Poynter has provided the most sympathetic, knowledgeable and imaginative assistance to his fellow scholars. Over the years he has also provided the facilities and the aid which have stimulated the researches of younger workers and of novices. Outside the scope of his specific, circumscribed duties, he has made his influence felt in the great range of Wellcome enterprises in the history of medicine in recent years, extending into Cambridge and Oxford and even overseas."

That Dr. Poynter was the friend and the fellow of medical historians everywhere is everywhere appreciated, his contributions recognized. From the western side of the Atlantic comes sorrowful tribute.

LLOYD G. STEVENSON

FIFTY YEARS ON

On Wednesday 17 and Thursday 18 October 1979 the William H. Welch Library and the Institute of the History of Medicine will jointly celebrate their fiftieth birthdays. Professor Karl Sudhoff, Professor Harvey Cushing and others, European and American, helped Professor Welch to launch the show fifty years ago on these dates, which together constitute the birthday of the history of medicine west of Leipzig. Next October we shall again welcome distinguished visitors from both sides of the Atlantic to join with the present staff and with Institute alumni in a rich and rewarding program. For information contact Institute of the History of Medicine, The Johns Hopkins University.

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* *Bull. Hist. Med*, 1973, *47*: 205-206.

ANNOUNCEMENTS

NATIONAL NEWS

American Institute of the History of Pharmacy

The AIHP held its annual meeting for 1979 on April 22-24 in Anaheim, Calif. In addition to contributed papers, highlights of the meeting included a reception in honor of David Cowen, and a symposium commemorating the 50th anniversary of the publication of Alexander Fleming's paper on pencillin. The Edward Kremers Award for 1979, for distinguished pharmaco-historical writing by an American, was presented to John M. Riddle, North Carolina State University, for his publications on the history of ancient and medieval pharmacy; John K. Crellin of Duke University received the George Urdang Medal for his excellent research on the history of pharmaceutical artifacts; and John A. Lynch, Temple University School of Pharmacy, was named recipient of an AIHP Certificate of Commendation for his work on the Kendig Museum at Temple.

Bethesda, Md.

One hundred years ago John Shaw Billings and Robert Fletcher brought out the first volume of *Index Medicus*. The National Library of Medicine commemorated the centenary of this important event, May 24-25, 1979, with a Board of Regents dinner and a program of papers. One segment dealt with "Medicine and Bibliography" and featured papers by Charles Rosenberg, Genevieve Miller, John B. Blake, and Frank B. Rogers, with Kelly H. West as moderator. The theme of the second segment was "The Physician and His Books." Scheduled participants were Edwin Wolf 2nd, G. Garth Huston, and Saul Jarcho. Moderator was William B. Bean, who also gave the dinner address, "A Sampler of Medical Libraries: Some Notes on the Care and Feeding of Books and Readers."

Boletin Informatiivo Hispanoamericano de Historia de la Medicina

After a lapse of nine years, the *Boletin Informativo Hispanoamericano de Historia de la Medicina* has resumed publication under the editorship of Dr. Enrique P. Aznárez, Professor of the History of Medicine and Director of the Institute of the History of Medicine, University of Córdoba. The purpose of the *Boletin* as stated in 1964 by its founder, Dr. Ricardo Archila, is "to promote studies in the history of medicine by means of a cooperation of interested individuals and institutions." To this end, it contains medical historical news, personal and institutional, concerning meetings, publications, appointments, obituaries, etc. Participating countries now include Argentina, Colombia, Ecuador, Guatemala, Paraguay, Uruaguay, Venezuela, and the United States. Dr. Guenter B. Risse of the University of Wisconsin is the United States correspondent. It is hoped that eventually there will be a collaboration of all countries of the Americas. Subscription to the *Boletin*, which appears twice

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a year, is $2.00 annually and can be entered with the Instituto de Historia de la Medicina, Estafeta 32 (Ciudad Universidad), 5000-Córdoba, República Argentina.

Cleveland

On April 30 and May 1, 1979, the Howard Dittrick Museum of Historical Medicine, The Cleveland Medical Library Association, sponsored "A Medical Collectors' Workshop." Designed to introduce current and future collectors to some basic principals of collecting, the workshop included information on how to care for historical books, photographs, and objects. Also discussed were medical publishing in America in the 19th century and reference tools for the medical book collector.

Wisconsin

A new medical history club has been formed at the Marshfield Clinic, Marshfield, Wis. Dr. W. Bruce Fye, who organized the club, completed his studies for the M.D. degree, as well as an M.A. in medical history, at the Johns Hopkins University. He is Associate Cardiologist and Director of the Cardiographic Laboratory at Marshfield, and has also been appointed Adjunct Assistant Professor of the History of Medicine at the University of Wisconsin, Madison. On February 15, 1979, he delivered the University's William Snow Miller Lecture, speaking on "The Professionalization of American Physiology: The Role of Henry P. Bowditch." The new Marshfield Medical History Club has been made a constituent society of the American Association of the History of Medicine.

PROGRAMS OF MEETINGS

Benjamin Waterhouse Medical History Society, Boston, Mass.

November 16, 1978: "The Relationship between Physiology and Philosophy: Pavlov for the East, Sherrington for the West," Ladislav Volicer.

December 7, 1978: "Vesalius, the Anatomist," and "Ambroise Paré, Military Surgeon," two films by Dr. Thomas Forbes, presented and discussed by Leo McCallum.

January 18, 1979: "Medicine in Revolutionary Boston," Philip Cash; "Medical Charity in Eighteenth-Century Massachusetts," Douglas Lamar Jones.

February 15, 1979: "Death by Sorcery: An Anthropological Inquiry," David Landy.

March 15, 1979: "Moses Maimonides," Jonathan Ben-Ezra.

April 5, 1979: "Surgical Personalities," David Anson Lee.

April 26, 1979: "Psychiatry at Boston University," John M. Murray.

College of Physicians of Philadelphia

March 21, 1979: "The Growth of Understanding of the Pulmonary Circulation," Alfred P. Fishman.

Georgetown University, Society for the History of the Health Sciences

April 25, 1979: "Foucault and the Subordination of the Clinic," H. Tristram Engelhardt, Jr.

Handerson Medical History Society, Cleveland, Ohio

March 27, 1979: "David Marine, M.D., and the Treatment of Goiter by Iodine, especially the Contributions of the Pennsylvania Trout Club," Charles A. Hubay.

Johns Hopkins Medical History Club

April 9, 1979: Film of Dr. Welch, with introduction by Victor A. McKusick and comments by George W. Corner.

April 16, 1979: Film of Dr. J. J. Abel, with introduction by Thomas B. Turner and comments by Warfield M. Firor, Richard W. TeLine, and Charles W. Wainwright.

Josiah C. Trent Society for the History of Medicine, Durham, N.C.

March 1, 1979: "The Civil War Court-Martial of William A. Hammond," Roy C. Selby.

April 18, 1979: "Disinfection of Mail," Emmet F. Pearson.

Marshfield Medical History Club, Marshfield, Wis.

February 26, 1979: "The Founders of the Marshfield Clinic," G. Stanley Custer.

Mayo Foundation History of Medicine Society, Rochester, Minn.

April 4, 1979: "The Plummer Building—50 Years of Service," Charles W. Nelson.

Robert Wilson Medical History Club, Charleston, S.C.

March 8, 1979: "The American Association for the History of Medicine," G. Edmond Gifford, Jr.

Society of Medical History of Chicago

March 14, 1979: Annual Morris Fishbein Lecture: "Physicians and Artists," Hymie Gordon.

April 10, 1979: "History of Blood Transfusion and the Contributions of Dr. Ludwig Hektoen, M.D.," Israel Davidsohn.

April 25, 1979: The 35th D. J. Davis Lecture in Medical History: "The Doctor's Image as Reflected in the *Matula*," Joseph H. Kiefer.

University of Virginia Medical History Society, Charlottesville, Va.

January 23, 1979: "Vienna Revisited," Wilhelm Moll.

March 13, 1979: "Home Medicine: Its Significance for Orthodox Practice," John K. Crellin.

April 10, 1979: "Audubon and His Charleston Physician Friends," G. Edmund Gifford, Jr.

Washington Society for the History of Medicine, Washington, D.C.

April 28, 1979: "The Ancient and Late History of Our Triune Brain," Paul D. MacLean.

NEWS FROM ABROAD

Austria

On February 2, 1979, Dr. Erna Lesky became Emeritus Professor at the Institut für Geschichte der Medizin der Universität Wien. During her eighteen-year association with the Institut Dr. Lesky made many important contributions to the history of medicine which received world-wide recognition. Among them might be mentioned her book, *Die Wiener medizinische Schule im 19. Jahrhundert* which appeared in 1965 in Austria (reprinted 1978) and was published in English translation in the same year by the Johns Hopkins University Press. Dr. Lesky's American friends will join her Austrian colleagues in wishing her a happy and fruitful retirement. Her address now is Hocheggweg 12, A6002 Innsbruck, Austria.

Canada

Dr. John Farley, Professor of Biology and History of Science at Dalhousie University, Halifax, was one of nine distinguished Canadians who received prizes of the Royal Society of Canada. Dr. Farley was awarded the Jason A. Hannah Medal for his important contribution to the history of medicine, *The Spontaneous Generation Controversy; from Descartes to Oparin.*" The Hannah Medal, which was established by the Hannah Institute for the History of Medicine to honor its late President, is accompanied by a grant of $1,000.

JOB OPENING

University of Toronto

The Hannah Institute for the History of Medicine invites applications for the post of Visiting Professor for one term (either but not both) during the academic year 1980-81. Candidates must hold a doctorate and have teaching experience at the university level. For further information please contact: T. Gelfand, Ph.D., Program History of Medicine, Faculty of Health Sciences, University of Ottawa, 275 Nicholas St., Ottawa, Canada K1N 9A9, or G. R. Paterson, Ph.D., Hannah Institute for the History of Medicine, 50 Prince Arthur Ave., Suite 105, Toronto, Canada M5R 1B5.

BOOK REVIEWS

WILLIAM H. MCNEILL, *Plagues and Peoples.* Garden City, New York, Anchor Press/Doubleday, 1976. x + 369 pp. $10.00.

Some day we may know enough about the epidemiology of various diseases to be able to speak with reasonable confidence about epidemics in past eras; some day the study of palaeopathology will have a precision it does not now possess; some day, perhaps, we will be able to distinguish the etiologies of various diseases in historical accounts, not merely by defective clinical descriptions, but through an analysis of their epidemiologies. Some day, but not yet. Anyone who ignores these limitations and sets out, as Professor McNeill does in *Plagues and Peoples,* to discuss, with an abundance of detail, the macrohistory of the relationships between "disease" and man since the dawn of human records in the space of 291 pages of text, 10 pages of appendix and 55 pages of detailed notes, is asking for trouble and certainly inviting controversy. Professor McNeill is no stranger to either.

This book has a number of large virtues which the historians of medicine should not overlook in their professional indignation at its faults. The most obvious virtue is its large perspective. Disease *did* have an enormous influence on human history, and merely by drawing attention to the most important manifestations of this influence Professor McNeill does a valuable service. The history of medicine, like other branches of history, is in great danger of drowning in its own preoccupation with the microcosm. McNeill is also enterprising—sometimes adventurous—in the application of perfectly acceptable generalized ideas about disease, and imaginative—sometimes too much so—in his application of respectable epidemiological theories such as the epidemiological threshold. His discrediting of the idea of plague pandemics—which he rightly attributes to the anxiety of plague research teams at the beginning of this century to dramatize their work—is especially salutary in that it should help to draw attention to the highly localized nature of most plague outbreaks and the slowness of plague's terrestrial expansion. Finally his enormous industry in examining the printed sources must command our admiration. His wide-ranging footnotes alone are worth the price of the book to all students of the history of disease.

The faults are more dramatic and arise in large part from the structure which the author has imposed on himself and his materials. This preoccupation appears to be inspired by a series of themes current among sociologists in the late 1950s: a belief in the close relationship between the biological and social universes; the belief that elements of the scientifically-explained biological universe could be used to explain social phenomena by means of analogy—in particular, that the theory of biological homeostasis could be applied in studying the evolution of social entities; and the implicit assumption that man has had a fixed genetic inheritance since the development of human intelligence, resulting in the conclusion that the relationship between other biological populations and man are dominated by evolution through natural selection on the part of the former, and social adjustment on the part of the latter. All these themes obtrude from Professor McNeill's narrative.

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Professor McNeill postulates a double set of relationships as the framework of his study: that between man and disease, which he calls microparasitism; and that within human society between tyranny and the commonality, which he calls macroparasitism. Tyranny relates to humanity on an analogy with the relationship between disease and humanity. In parallel and related ebbs and flows this relationship is charted in antiquity by the sort of circumstantial evidence which is all that is available. As the narrative approaches contemporary times and the evidence becomes better (and harder to accommodate within the framework) the theme of parallel micro- and macroparasitisms is quietly dropped, which is as well since it sheds no real light on the relationship of disease with mankind. The principal objection to this approach, however, is the uncertainty which the use of analogy creates. Professor McNeill, like the late medieval schoolmen, believes that analogy is an appropriate tool, not only for historical research, but for scientific generalization as well. His analogies suffer the same shortcomings as those of his medieval predecessors: since their elements are not exactly defined, they are ineffective; but to define the elements exactly, Professor McNeill would have to possess a lot more information than he does. The truth is that we do not know much about disease before the nineteenth century, and lacking information Professor McNeill has turned to analogy, the refuge of ignorance. Unfortunately, he heightens the impression of half-truth and uncertainty by an unattractive habit of following bold and frequently unsupported assertions with careful disclaimers which, if taken at face value, should constitute withdrawals of the original statements. The statements, however, usually continue to do service in his schema. For example: after sweeping statements concerning the impact of malaria on ancient society (for which there is virtually no evidence), he states: "Under the circumstances no one can expect to decipher the critical variables in ancient environments that defined where and how seriously malaria interfered with human activity."

The result is that in maintaining his framework and analogies he is pushed to manipulate the record by peculiar judgments, judgments based on no hard evidence, lapses in logic, distorted interpretation, factual errors and ludicrously defective syntax. A few examples must suffice: Did epidemics make early Christianity attractive to the inhabitants of the Roman Empire? What is the evidence? Did epidemics that apparently wrecked the Eastern Roman and Persian armies really by-pass the Moslem armies that defeated them because the Moslems had previously been less exposed to these diseases than had the Romans and Persians? Can crop surpluses of early farmers really be regarded as "antibodies" against the incursion of tyranny? *Must* the epidemics in the Roman Empire in the 2nd and 3rd centuries A.D. have been measles and smallpox? Must they have been "what one would expect" and "exactly what was required"? Did they precede or follow the economic decline of the Roman Empire? Can the unproven statement that plague existed on the Chinese coast in the 8th and 9th centuries A.D. really be used to establish the date at which plague arrived in Japan as 808 A.D.? Was game less abundant in Alaska than further south in the Americas at the time of the migration across the Bering Strait land bridge? The latest archaeological evidence suggests not. Yaws is *not* to be confused with endemic syphilis. Breaking land to the plough does *not* destroy plague foci, as the recent experience in the northern Caspian Basin has demonstrated. Rice paddy culture was established in the Japanese islands by the 6th century A.D., *not* the 17th century. The Irish population explosion did not occur as a result of the adoption of the potato culture, but rather the potato culture was adopted in response to some of the economic effects of rapidly increasing population. Finally, what are we to make of such statements as: "Young adults in the prime of life characteristically die more frequently than other age groups"; "Literally thousands of persons moved to and fro across Eurasia leaving scant trace in written records"; or "The other source of systematic instability within the Eurasian world balance . . . was the possibility of further altering communications patterns . . . "?

Plagues and Peoples, which is already widely circulated in paperback edition, will no doubt continue to attract the unlearned by its facile explanation of the dramatic confrontation between man and disease. It will continue to infuriate the learned. It should inspire the perceptive to build on its virtues and do better.

Reviewed by JOHN NORRIS, Ph.D., Department of History, University of British Columbia, Vancouver, B.C., Canada.

PAUL E. STEPANSKY. *A History of Aggression in Freud.* (Psychological Issues, Monograph 39.) New York: International Universities Press, Inc., 1977. ix + 201 pp., index. $12.50 (cloth); $8.50 (paper).

Many have regarded *Beyond the Pleasure Principle* (1920) as the most fascinating and perplexing text in Freud's entire oeuvre. In that audacious and wide-ranging metapsychological inquiry, Freud put forward a startling new conception of the death instincts or Thanatos, which he saw as striving to eliminate all tension from the living system and by so doing to return organic life to an inorganic state. Thus conceived, the death instincts are initially directed inwards against the self—but, Freud went on to argue, they are subsequently turned towards the outside world in the form of the aggressive or destructive instinct. Freud opposed the death instincts to the life instincts or Eros, and maintained that the individual's libidinal development is the result of conflict and compromise between those two great principles or forces.

Beyond the Pleasure Principle has been held to mark a decisive turning-point in Freud's thought. From the outset, however, it has also been recognized to pose difficult theoretical and empirical problems. The theory of a death instinct immediately aroused protest among Freud's followers and remains to this day one of the most controversial of Freudian concepts. On a more fundamental level, Freud's biologism—his use of biological concepts to support his hypothesis of a death instinct—has repeatedly been criticized. It is not just that Freud relied heavily on a now discredited theoretical biology dominated by vitalist and mechanist categories. Equally troubling is the fact that we cannot be certain that Freud himself found his biological borrowings convincing. For example, Freud discusses in detail some experiments on the immortality of unicellular organisms only to break off at precisely the point when it begins to appear to the reader that the experiments in question would tend to refute the existence of an innate tendency towards death.[1] Indeed, although Freud first introduced the notion of a death instinct merely as a plausible speculation that he wished to pursue in order to satisfy his scientific curiosity, his attitude towards the notion soon became fixed: "To begin with it was only tentatively that I put forward the views I have developed here, but in the course of time they have gained such a hold upon me that I can no longer think in any other way." In short Freud's commitment to the theory of a death instinct in *Beyond the Pleasure Principle* may appear to raise two fundamental problems for the historian: What "deep-rooted internal prejudices" (Freud's words quoted by Stepansky), if any, drove Freud to postulate the existence of a death instinct at that time? And what external factors conditioned his doing so?

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[1] See Jean Laplanche, *Life and Death in Psychoanalysis,* trans. Jeffrey Mehlman (Baltimore and London The Johns Hopkins University Press, 1976), p. 110

These questions are a central concern of Paul E. Stepansky's impressive study. Briefly, Stepansky argues that for a variety of reasons, having to do with Freud's personal life, professional ambitions, and response to cataclysmic events in the world, the founder of psychoanalysis was unwilling to recognize the existence in man of an autonomous aggressive instinct; and he interprets Freud's hypothesis of a death instinct primarily turned inward towards the self and only by deflection turned outward against others as final evidence of that unwillingness. Stepansky supports his argument by a detailed examination of the relationship between the vicissitudes of the concept of aggression in Freud's thought and Freud's evolving personal and social situation. In seven well-organized and economical chapters (plus an epilogue), the author traces the development of Freud's views on aggression from the earliest clinical observations on the obsessional neuroses, where aggression is tied to masculinity, through the discussion of "typical dreams" and hostile jokes, the theory of psychosexual development, the great metapsychological papers of 1915, to the climactic concept of the death instinct. At every stage of his investigation, Stepansky is led to conclude that Freud's treatment of aggression may be seen as an attempt to rationalize and hence to minimize the impact of aggressive impulses both in himself and in others.

It has generally been held that Freud came to acknowledge the importance of aggression late in his career, an impression encouraged by Freud himself. One of the considerable merits of Stepansky's book is his demonstration that while it is true that Freud for a long time rejected the idea of an independent aggressive instinct, he did not before 1920 ignore the role played in psychic functioning by aggressive impulses. The import of Stepansky's account is therefore to deny that, at least in this regard, *Beyond the Pleasure Principle* represents a complete break in Freud's thought and to emphasize instead the "organic" continuity between Freud's earlier and later views.

The author observes that relatively early on Freud recognized the existence of nonsexual aggressive impulses in man, e.g., in the child's struggle for mastery, in hostile jokes, and in so-called "typical dreams" involving the death or disparagement of a close relative or rival. *The Interpretation of Dreams* (1900) recounts several of Freud's dreams of this kind concerning relatives and colleagues, notably Fliess, and Stepansky suggests that Freud's refusal to reduce *all* dream wishes to invariably sexual impulses stemmed in part from his growing recognition of the role played by his own aggressive fantasies as the latter were brought to light in the course of self-analysis. (Stepansky observes that in its original conception the Oedipus complex itself came under the heading of such "typical dreams.") The fact remains, however, that Freud was not led by his findings to posit the existence of an independent aggressive drive but tended on the whole to subordinate aggression to the sexual instincts. In a long and continuously interesting discussion Stepansky attempts to explain why this was so. Relying in part on Nathan Hale's recent study of the reception of psychoanalysis in America and examining closely Freud's reaction to Alfred Adler's early conceptions concerning the aggressive drive, Stepansky emphasizes the importance both of certain "political and cultural imperatives dictated by the emergence of an organized psychoanalytic movement" (p. 105) and of more purely subjective factors. He maintains that prior to 1915 Freud was "predisposed" to favor an etiological reductionism to sexuality partly because the identity and hence the survival of psychoanalysis as a professional and social movement were deeply bound up with the theory of sexual instincts. In addition he shows that Adler's views—which he argues Freud consistently and apparently unconsciously misrepresented in print—seemed to Freud to constitute a defection from the psychoanalytic movement at a particularly vulnerable moment in its evolution; and he further suggests that Freud came to see in Adler himself a "revenant" of Fliess, with whom he had earlier found it necessary to break. Moreover, Stepansky detects in what he sees as Freud's simplification and virtual distortion of Adler's ideas a deep resistance to the very possibility of an autonomous aggressive instinct in man, a resistance that Freud's painful memory of Fliess did nothing to abate. I found Stepansky's reconstruction of Freud's controversy with Adler stimulating, although I would have welcomed a summary of Freud's relations with Fliess as well as a brief discussion of why Adler seemed to Freud "a little Fliess returned."

Stepansky goes on to claim that the theoretical innovations subsequently introduced by Freud were likewise conditioned by personal and external factors. When in 1915 Freud reformulated his views so that for the first time aggression emerged as a nonlibidinal trend attributed to the ego-instincts, the author, unlike Bibring and others, does not regard that fundamental shift in Freud's thought solely in terms of the internal development of psychoanalytic theory. Instead he calls attention to Freud's complex emotional response to World War I and argues that the shift in question enabled Freud to rationalize the immense and personally threatening destructiveness of the war by portraying that destructiveness as a perversion of healthy and developmentally necessary aggressive tendencies. A similar line of reasoning is pursued to explain Freud's hypothesis of a biological death instinct in *Beyond the Pleasure Principle*. Far from viewing Freud's recourse to a theoretical biology merely as subserving a commitment to biological reductionism, as many have done, Stepansky construes Freud's biologism as providing the further rationalization he required to counteract his profound feelings of depression owing to the war.

This is a serious, well-written, jargon-free book in which the author advances an original thesis and supports it by rigorous arguments based on an intimate familiarity with Freud's writings. Although a few scholars have noted that Freud did not entirely neglect the theory of aggression before 1920, Stepansky appears to be the first to have studied the development of the concept in Freud's thought in detail, and on this ground alone his book is a welcome addition to the literature. It is also a valuable contribution to the institutional history of psychoanalysis. Because of the sectarian feeling that still surrounds the subject, the author's claim that the content of Freud's theories was deeply influenced both by the latter's need to retain personal leadership of the psychoanalytic movement and by more purely psychological motives is bound to arouse debate. Personally, I found Stepansky's analysis interesting and suggestive. Whatever reservations I have are general in nature. The author repeatedly states that the factors he emphasizes account only in part for the developments in Freud's thought that are the object of his investigation, but he nowhere attempts to assess the relative importance for our understanding of those developments of "scientific" versus "extra-scientific" considerations. To put this another way, he attributes to Freud "a persistent, personally, and professionally defensive need to avoid postulating a primary aggressive drive" (Roy Schafer's words in the Foreword to Stepansky's book), but stops short of arguing that such a need ultimately explains Freud's resistance to the notion of an independent aggressive instinct. In sum one senses a certain equivocation as regards Stepansky's final interpretative ambitions.

In this connection it is instructive to compare his enterprise with that pursued by Jean Laplanche in *Life and Death in Psychoanalysis*. Although both authors agree that Freud's introduction in 1920 of a biological death instinct does not represent a wholly new development in his work but rather marks the last manifestation of a persistent tension in his thought, they go about the task of interpreting that tension in basically different ways. Through a series of extremely close readings of Freudian texts, Laplanche demonstrates that biologism and (what he considers) genuinely psychoanalytic insight are in fundamental if unacknowledged conflict throughout Freud's career, and that two radically opposed systems, one metonymic and the other metaphoric, may be said to structure all the texts in question. American and British readers may regret in Laplanche the absence of the sort of psychohistorical explanation of crucial features of Freud's thought offered by Stepansky. Nevertheless, it may be felt that Laplanche's essentially structural (not structuralist) reading amounts to a more compelling demonstration of the force of the very propensity of thought that is of central concern to both authors.

Reviewed by RUTH LEYS, Ph.D., Department of the History of Science, The Johns Hopkins University, Baltimore, Md.

JAMES G. BURROW. *Organized Medicine in the Progressive Era: The Move Toward Monopoly*. Baltimore and London: The Johns Hopkins University Press, 1977. ix + 218 pp. $12.95.

James G. Burrow, well known to medical historians as the author of *AMA: Voice of American Medicine* (1963), narrows his scope in this compact, readable volume to look at organized medicine in the Progressive Era (1900-1917). These years, Burrow tells us, were the most critical in the history of organized medicine in America, for it was then that a "disheartened profession moved from virtual political impotence . . . to a monopolistic control of medical practice" (p. 12). Few readers, I suspect, will quarrel with this conclusion, although some may feel uncomfortable with the author's further assertion that "patterns of control that the profession secured over the supply of physicians in the Progressive Era account in large measure for the physician-shortage crisis that the nation has faced for about three decades" (p. vii).

Unlike his study of the AMA, this book looks at organized medicine at the state, as well as the national, level and rests largely on a careful reading of the many state medical journals that appeared near the turn of the century. Although these publications customarily reported local activities, Burrow fails, in my opinion, to give a satisfactory account of county and district medical societies, where many of the profession's practices and attitudes evolved and where the policies of organized medicine often had their greatest impact. This oversight is especially unfortunate because detailed local records are readily available in some states (e.g. New York and Wisconsin).

Burrow does tell us how the American medical profession, following the AMA's reorganization in 1901, used its new-found strength to reform medical education, establish licensing boards, subjugate rival sects, and promote public health measures. He also describes the economic struggles of the profession, its surprising (to me) ambivalence toward contract practice, and its brief flirtation with compulsory health insurance. Along the way, he offers some intriguing and novel insights. He points out, for example, the irony in organized medicine's striving to win control of medical affairs while simultaneously attempting to shift the financial burden of training physicians to the state. And he argues that "no event in the social history of American medicine is more important" than the AMA's selection in 1900 of Joseph N. McCormack to organize county, state, and national medical societies into one harmonious unit (p. 16). The novelty of this view is dramatized by the fact that John Duffy fails even to mention McCormack in his recent survey of American medical history.

Burrow is strongest in describing the concerns of American physicians during the early years of the century and weakest, I think, when attempting to explain their genesis. In accounting for medicine's short-lived progressive spirit, he invokes Richard Hofstadter's controversial hypothesis of a "status revolution," arguing that physicians, who had enjoyed "modest comfort throughout most of the nineteenth century," suffered "widespread professional poverty" in the early twentieth and thus turned to reform (pp. 14-15). The connection between the profession's alleged loss of status (which I question) and its reform sentiment remains far from clear, and Burrow's identification of a growing surplus of physicians as the "cause of their plight" ignores the virtually constant doctor-patient ratio in the United States between 1850 and 1910.

Despite a few such problems, and the book's failure at times to provide an adequate medical context, *Organized Medicine in the Progressive Era* should be read by all persons interested in the social history of modern medicine. If available in paperback, it could serve as useful collateral reading in courses on American medical history.

Reviewed by RONALD L. NUMBERS, Ph.D., Department of the History of Medicine, University of Wisconsin, Madison, Wis.

ALEXANDRA OLESON AND SANBORN C. BROWN. *The Pursuit of Knowledge in the Early American Republic: American Scientific and Learned Societies from Colonial Times to the Civil War.* Baltimore and London: The Johns Hopkins University Press, 1976. xxv + 357 pp. $16.50.

Before the rise of universities in the late nineteenth century, a major locus for the promotion and dissemination of science in America was the local learned society founded in the urban centers of the country by a mixture of professional and business men. The collection of papers presented in this volume is the result of a conference on early learned societies held at Cape Newagen, Maine, in 1973. Commissioned by the American Academy of Arts and Sciences under a grant from the National Science Foundation, the papers were rewritten for this volume in the light of discussion at the conference. The Newagen conference was the first of three. The second, already held, covered the period from 1860 to 1920, and the third will cover the period from 1920 to the present.

Almost all the well-known historians of science working in this period of American science have contributed to the volume, as well as several authors associated with learned societies. For convenience, the articles may be divided into four categories: (1) those that trace the history of a particular institution (Royal Society, Albany Institute, Academy of Natural Sciences, Western Academy of Natural Sciences, Franklin Institute, and American Association for the Advancement of Science); (2) those that describe the formation of societies in a geographic area (New York, Boston and vicinity, the Southeast, and Canada); (3) those that investigate the relation of learned societies to a particular subject area (humanities, medicine, and agriculture); and (4) general articles. In the last category, John Greene compares the pattern of society formation in the major cities of the northeast, Hunter Dupree applies the concepts and terminology of information theory to learned societies, and Nathan Reingold re-examines the much misused terms, "professional" and "amateur," and suggests a new division of the scientific community into researchers, practitioners, and cultivators.

The one article of special interest to historians of medicine, "Medicine and the Learned Society," by James Cassedy, tells us why historians of medicine might be interested in the other articles in the volume. The medical man, as one of the few members of the community to receive training in science, was among the most active members of all the early learned societies. Physicians might join societies to further their ambitions as scientists, to attain a degree of social status that the disorganized profession of medicine did not guarantee, or simply to act the part of learned men. Many of the papers in the volume, Cassedy's included, emphasize the important point that there was no sharp distinction in late eighteenth and early nineteenth century America between pure and practical science. Medicine and public health, as well as agriculture and technology, were frequently discussed at the meetings of learned societies, and found their way into the society journals.

This collection of papers contains much new material on the history of particular societies, and offers some interesting perspectives on the role of learned societies in the development of American science and technology. However, it does not quite live up to its goal of being "the first broad overview of the activities, influence, and cultural role of learned societies in America's first century" (p. xiii). The volume makes no attempt to cover the ground, but rather reflects the particular interests of the participants. While some of the articles are sophisticated methodologically, others are purely descriptive or offer naive statistics. Only a few attempt to relate societies to the internal progress of science (an exception is Henry Shapiro's article on the Western Academy of Natural Sciences). It would have been useful if the volume had included some of the discussion at the Newagen Conference, especially since the two commentator's articles made little use of the opportunity to criticize the papers. Despite, and even because of, its unevenness, the volume is valuable as a stimulus to further research. Anyone studying a scientific, or a medical, institution will find in the variety of approaches represented in this book, many useful insights into how to handle institutional history, and what types of questions may be most fruitfully asked.

Reviewed by TOBY A. APPEL, Ph.D., Charles Willson Peale Papers, National Portrait Gallery, Smithsonian Institution, Washington, D.C.

MARTIN KAUFMAN. *American Medical Education. The Formative Years, 1765-1910* Westport, Conn. Greenwood Press, 1976. x + 208 pp. $12.95.

In *American Medical Education*, Martin Kaufman has selected an important, essentially unexplored topic. Over the past few decades, several writers have surveyed the low calibre of medical training which existed in early nineteenth-century America; but until now no one has systematically examined the history of medical education after the Civil War, nor has anyone yet provided an authoritative synthesis placing medical education within the broader social and scientific context. It is this void which Kaufman's book is intended to fill. After a brief survey of colonial medical education, the book describes in detail the unhealthy condition of American medical education and practice which developed in the early and middle nineteenth century. It then recounts the many efforts to attract better students and to provide more rigorous training—efforts which finally succeeded only after more than half a century of frustration and failure. Throughout its pages, the study emphasizes the role played by organized medicine in achieving these reforms.

Kaufman is to be commended for his detailed, comprehensive description of the low status of the medical student, medical profession, and medical schools which existed throughout most of the nineteenth century. In an era of scientific medicine, it is easy to forget the deplorable condition of professional training which existed in this country less than a century ago. The author aptly describes the tension between the proprietary medical schools and the educational reformers, and he appropriately, if fleetingly, mentions the importance of the emergence of the endowed university medical school in achieving the reforms. For those who have read such writers as Shryock, Rothstein, and Norwood, as well as Kaufman's earlier book on homeopathy, little new is presented in this part of the book; but the portrayal is vivid, and the amount of evidence amassed, substantial, leaving no reader in doubt as to the low state of affairs in American medical education throughout most of the previous century.

This book is also helpful in chronicling the events which transpired on the path to educational reform. It documents and describes the numerous, usually unsuccessful efforts to improve education before the Civil War, as well as the successes which began in the latter nineteenth century and which culminated in the aftermath of the Flexner Report of 1910. Here a note of caution is indicated, for the author perhaps exaggerates the importance of the Flexner Report in transforming American medical education. The report undoubtedly was important, but a more extensive analysis of its significance might have been helpful, particularly in view of the several recent studies that indicate that the reforms advocated by Flexner were in fact already underway before the publication of the famous report.

Despite the above praiseworthy features, the book is not without weaknesses. For one thing, it does not describe the fundamental changes in the nature and philosophy of medical instruction which occurred during the period. The reader new to the field will not appreciate from this book that the reform of medical education involved the marriage of the basic sciences (anatomy, pathology, physiology, chemistry, and bacteriology) with the clinical subjects. Neither will he recognize that the more rigorous entrance requirements ultimately established involved not only a longer period of preliminary education but a change in prerequisites from Latin and Greek to French and German, from "natural philosophy" to biology, chemistry, physics, and mathematics. Most important, he will not realize from this study that the reform involved the adaptation of a new educational philosophy in which the student, both in preclinical and clinical courses, would begin to learn by doing rather than by watching. The book's view of reform as the campaign for a lengthened course of study with a progressive, graded curriculum is but part of the story, leaving out the more fundamental transformation in which the student's role changed from passive observer and listener to active participant. By 1910 many students were learning science in the laboratory and clinical medicine in the hospital or clinic, participating in the actual care of patients. Thus, the book seems not to have grasped the essence of the reform of medical education: teaching standards were not merely "improved," but one system of instruction was replaced by another, qualitatively different system.

Another problem lies in the chronology, for it is not clear that the book focusses entirely upon the right persons and events. The narrative emphasizes the role of organized medicine, particularly the American Medical Association and the Association of American Medical Colleges, and focusses much less on events within the medical schools themselves. While it is quite apparent from the author's discussion that organized medicine was keenly interested in the reform of medical education—he documents extensively their resolutions and meetings urging such reforms—he does not provide evidence that their rhetoric affected those at the medical schools actually charged with making the decisions about the curriculum. There can be little doubt that organized medicine contributed to the reform of medical education, particularly after 1900, but its exact influence still needs to be assessed more completely than is done here. To show that the A.M.A. desired medical education to be reformed is not the same as showing that the organization in fact affected those reforms.

This possible focus on the wrong actors is part of a larger difficulty with the book: the absence of any appreciable effort to understand *why* the changes in medical education occurred. After several decades of failures, the reformers finally started winning victories, but the reader is given little idea as to why. In particular, one would have hoped to see some discussion of the role that advances in medical science and medical practice played in promoting the changes in medical instruction. The curriculum changes occurred at the end of a century of remarkable progress in physical diagnosis, surgery, pathology, and bacteriology. These scientific advances are alluded to in the book so hurriedly and passingly as to seem irrelevant to the reforms, no direct connection being drawn between them and the eventual educational changes. The reader is left to speculate whether perhaps medical education underwent reform when it became clear that an intensive, scientific medical education finally began to make a difference in the outcome of a doctor's care.

Finally, a few minor problems should be pointed out. The book contains frequent factual errors, none major enough on their own accord to warrant mention, but enough in number to leave the reader slightly uneasy. The author uses a writing style in which the narration frequently consists of multiple excerpts from secondary sources. Since the appropriate references would still be cited in the footnotes, it would perhaps seem better to paraphrase or interpret rather than to cast the narrative in the form of a series of quotations. The author's sources are comprehensively recorded in a fifteen-page bibliography, but this reader would have found an essay to be more helpful than a listing of every source consulted. It is clear, however, that the author has conducted a large volume of research, for which he is to be commended.

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THE BULLETIN RECENTLY RECEIVED*

Robert J. Benford (Compiler). *The Heritage of Aviation Medicine: An Annotated Directory of Early Artifacts.* Washington, D.C.: Aerospace Medical Association, 1979. ix + 122 pp. Ill. $4.50 (paperbound).

Elizabeth Bennion. *Antique Medical Instruments.* Berkeley: University of California Press, 1979. xii + 355 pp. Ill. $65.00.

Brian P. Copenhaver. *Symphorien Champier and the Reception of the Occultist Tradition in Renaissance France.* The Hague-Paris-New York: Mouton Publishers, 1978. 368 pp. Ill. DM 92.

Jane B. Donegan. *Women and Men Midwives: Medicine, Morality, and Misogyny in Early America.* Westport, Conn.-London, Eng.: Greenwood Press, 1978 (Contributions in Medical History, No. 2). viii + 316 pp. Ill. $17.95.

John Duffy (Editor). *Ventures in World Health. The Memoirs of Fred Lowe Soper.* Washington: Pan American Health Organization, 1977 (Scientific Publication No. 355). xiv + 363 pp. Ill. $10.00.

Galen. *On the Doctrines of Hippocrates and Plato.* Edition, Translation and Commentary by Phillip De Lacy. First Part: Books I-V. Berlin: Akademie-Verlag, 1978 (Corpus Medicorum Graecorum, V 4, 1, 2). 359 pp. DM 98.

Joseph P. Hou. The *Myth and Truth about Ginseng.* South Brunswick and New York: A. S. Barnes & Co.; London: Thomas Yoseloff Ltd., 1978. 245 pp. Ill. $9.95.

Martin Kaufman. *University of Vermont College of Medicine.* Hanover, N.H.: University of Vermont College of Medicine; distributed by the University Press of New England, 1979. xviii + 275 pp. Ill. $15.00.

Steven Lehrer. *Explorers of the Body.* Garden City, N.Y.: Doubleday & Co., 1979. 463 pp. Ill. $12.95.

Erna Lesky. *Franz Joseph Gall, 1758-1828: Naturforscher und Anthropologe.* Ausgewahlte Texte, eingeleitet, übersetzt und kommentiert von Erna Lesky. Stuttgart-Wien: Verlag Hans Huber Bern, 1979 (Hans Huber Klassiker der Medizin und der Naturwissenschaften, Bd. XV). 217 pp. Ill. Fr. 38/DM 43 (hardbound); Fr. 28/DM 32 (paperbound).

———. *Die Wiener medizinische Schule im 19. Jahrhundert.* Graz-Köln: Verlag Hermann Böhlaus Nachf., 1978 (Studien zur Geschichte der Universität Wien, Bd. VI). 660 pp. Ill. DM 94.

Kenneth Levin. *Freud's Early Psychology of the Neuroses: A Historical perspective.* Pittsburgh: University of Pittsburgh Press, 1978. ix + 314 pp. $12.95.

Robert E. McKechnic. *Strong Medicine: History of Healing on the Northwest Coast.* Vancouver, B.C.: J. J. Douglas, 1972. xiii + 193 pp. $8.95 (cloth); $4.95 (paper).

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* The *Bulletin* reserves freedom of decision as to the publications to be included in this section. Items received, other than those assigned for review are ultimately incorporated into the collection of the Institute of the History of Medicine.

Jonathan Miller. *The Body in Question*. New York: Random House, 1978. 352 pp. Ill. $15.95.

Sigismund Peller. *Cancer Research since 1900: An Evaluation*. New York: Philosophical Library, 1979. xv + 393 pp. $15.00.

Julius Preuss. *Biblical and Talmudic Medicine*. Translated and edited by Fred Rosner. New York-London: Sanhedrin Press, 1978. xxix + 652 pp. $35.00.

Jacques M. Quen and Eric T. Carlson (Editors). *American Psycho-analysis: Origins and Development*. The Adolf Meyer Seminars. New York: Brunner/Mazel, 1978. xii + 216 pp. $15.00.

L. J. Rather. *The Genesis of Cancer: A Study in the History of Ideas*. Baltimore & London: The Johns Hopkins University Press, 1978. xiii + 262 pp. $17.50.

Juan Riera. *Las polemicas lulistas y el Consejo de Castilla (1750-1765)*. Valladolid, 1977 (Cuadernos Simancas de Investigaciones Historicas, Monografías IV). 152 pp.

David E. Rogers. *American Medicine: Challenges for the 1980*s. Cambridge, Mass.: Ballinger Publishing Co., 1978. vii + 151 pp. $10.00.

Charles E. Rosenberg (Editor). *Healing and History. Essays for George Rosen*. Dawson: Science History Publications, 1979. viii + 262 pp. Ill. $22.75.

Joseph Schiller. *La notion d'organisation dans l'histoire de la biologie*. Paris: Maloine s.a. editeur, 1978 (Recherches Interdisciplinaires). vi + 133 pp. Fr. 70.

Andrew T. Scull. *Museums of Madness. The Social Organization in 19th Century England*. New York: St. Martin's Press, 1979. 275 pp. Ill. $17.95.

Paul U. Unschuld. *Medical Ethics in Imperial China: A Study in Historical Anthropology*. Berkeley-Los Angeles-London: University of California Press, 1979. viii + 141 pp. Ill. $12.00.

Richard W. Wertz and Dorothy C. Wertz. *Lying-In: A History of Childbirth in America*. New York: Schocken Books, 1979. xii + 260 pp. Ill. $4.95.

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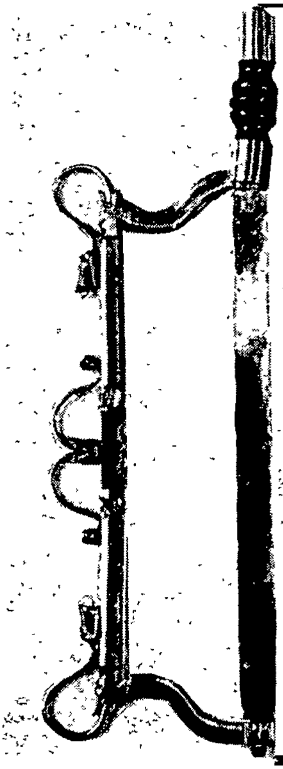

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THE FDA's REGULATION AND CONTROL OF ANTIBIOTICS IN THE 1950s

THE HENRY WELCH SCANDAL, FÉLIX MARTÍ-IBÁÑEZ, AND CHARLES PFIZER & CO.*

RICHARD E. McFADYEN

The discovery and widespread production of antibiotics such as penicillin, tetracycline, streptomycin, and others mark a dramatic page in the history of modern medicine.[1] This rapid increase in the number of antibiotics pouring onto the American market after the Second World War put new responsibilities on the Food and Drug Administration to control and regulate these new antibiotics properly. In the more than a half century since the passage of the first Pure Food and Drugs Act, the Food and Drug Administration had never been tainted with an internal scandal. But in late 1959 and early 1960, a high official of the FDA, Dr. Henry Welch, was charged with serious instances of conflict of interest involving the regulation of antibiotics. The Welch scandal had a number of significant ramifications. Although the Welch case proved to be an isolated episode, it seriously damaged the reputation and morale of an agency that had had a long, proud history of consumer protection. The Welch scandal alerted the agency to the dangers of becoming too closely intertwined with the industry it was supposed to regulate. In addition, the Welch scandal, along with Senator Carey Estes Kefauver's investigation into the pharmaceutical industry and with the

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* Presented at the 51st annual meeting of the American Association for the History of Medicine, Kansas City, May 11, 1978

[1] For more on the history of antibiotics see Harry F. Dowling, *Fighting Infection: Conquests of the Twentieth Century* (Cambridge: Harvard University Press, 1977)

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thalidomide scare,[2] did much to awaken the agency to the need to revamp federal legislation regulating the booming antibiotics field.

At the beginning of the 1950s, Dr. Henry Welch found himself in a key position in the development of antibiotics. Welch, who held a Ph.D. in bacteriology from Western Reserve (he was not an M.D.), had joined the FDA in 1938. In 1943, at the request of the Army, the FDA, under the guidance of Dr. Welch, undertook the task of developing standards and tests to insure the safety and efficacy of each batch of penicillin. With the arrival of the commercial production of penicillin, the FDA was empowered to certify each batch of penicillin produced.[3] Welch became director of the Division of Penicillin Control and Immunology, later in 1951 renamed the Division of Antibiotics.[4] Rapidly within the next five years or so newly discovered antibiotics, such as streptomycin, tetracycline, bacitracin, and chloramphenicol, were added to the certification lists.[5]

In his position in the FDA, Dr. Welch by the early 1950s was on the cutting edge of new developments in antibiotics. He himself had published widely in the field and was well on the way to establishing himself as a major figure in this new and growing area.[6] Thus it was not surprising that in 1950 Dr. Welch was approached by Dr. Henry J. Klaunberg to edit a new journal dedicated to the growing field of antibiotics. At the same time, Klaunberg suggested that Welch, along with Dr. Charles Lewis, also of the FDA, might author a book on antibiotic therapy for the physician. Both the journal and the book were to be published by the Washington Institute of Medicine. Welch requested permission from his superiors to undertake these outside activities pointing out that he would receive an honorarium for editing the journal, if successful, and the usual author's percentage on the book. In due time, Welch received permission to proceed from the then commissioner of FDA, Dr. Paul B. Dunbar.[7]

By October 1950, the new journal, called *The Journal of Antibiotics,* made its first appearance. The journal boasted a distinguished editorial board including five Nobel Prize winners and such stellar names in the history of antibiotics as Sir Howard W. Florey, Dr. Selman Waksman, and Sir Alexander Fleming. Work moved rapidly ahead on the book, *Antibiotic Therapy,* by Welch and Lewis which was published in 1953.[8] In the first two years of his editorial duties, Welch received only $150 for his efforts; by 1952, his endeavors were a little more lucrative, but the $3270.59[9] he received was within the limits of an honorarium. But by 1952, a series of events radically changed Welch's relationship with his publisher, setting him on the road to potential conflict of interest charges.

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[2] For a more complete discussion of the thalidomide episode see Richard E McFadyen, "Thalidomide in America: a Brush with Tragedy," *Clio Medica,* 1976, *11.* 79-93. See also *Suffer the Children: The Story of Thalidomide,* by the Insight Team of *The Sunday Times* of London (New York Viking Press, 1979).

[3] In 1945 the Food, Drug, and Cosmetic Act was amended to require certification of penicillin. U.S. Congress, Senate. *Administered Prices Hearings before the Subcommittee on Antitrust and Monopoly of the Committee on the Judiciary,* 86th Cong. 2nd sess., Part 23, 13075-76; hereafter cited as Administered Prices

[4] *Ibid.,* 12634

[5] *Ibid.,* 13076. Under the Kefauver-Harris Amendments of 1962, all antibiotics were added to the certification list.

[6] For a list of Welch's publications see *ibid.,* 13081-93.

[7] *Ibid.,* Part 22, 11926-38, also for a chronology of Welch's outside activities see Part 23, 12949-52.

In 1952, Welch's publisher, the Washington Institute of Medicine, under Dr. Klaunberg, fell into bankruptcy. As a result, Klaunberg sold all rights to Welch's book to Welch and his new partner, Dr. Félix Martí-Ibáñez. The two men now set up a new corporation, Medical Encyclopedia, which was to publish the book as well as other monographs. Around the same time, Dr. Martí-Ibáñez also took over control of the Washington Institute of Medicine, which published Welch's journal. Although Welch was not an owner of the Washington Institute, he was now in a position to benefit greatly monetarily from its editorship.[10]

Welch and Martí-Ibáñez realized the vast commercial potential represented by the growing market for antibiotics. They now proceeded to exploit Welch's position and prestige in the field of antibiotics through their various publishing enterprises. Articles and editorials which dealt favorably with a company's drug products could potentially be sold as reprints to companies who would distribute them, along with advertising material, to doctors. In addition to the very lucrative reprint business, the journals (a second one was created in the mid-1950s) also carried advertisements from the drug companies. Rather rapidly Welch, the chief regulator of the antibiotics industry, found himself in the position of chief editor of "scientific papers" frequently sponsored by drug companies and which were to appear in his journals supported by the companies' own advertising and bulk purchases of reprints. Incredibly, this arrangement went on for almost a decade.

One venture envisioned by the two men was the publication of a series of monographs recounting the history and use of particular antibiotics to doctors. By 1958, MD Encyclopedia, Inc., was publishing over 10 different volumes edited by Welch on various antibiotics including penicillin, Terramycin, and aureomycin.[11] The publishers were not hesitant in sending unpublished manuscripts to drug companies to determine if they might be interested in sponsoring the publication of the volume by buying advance copies of the book. In one case, the advertising department of Charles Pfizer and Co. informed Martí-Ibáñez that they were not interested in buying reprints of a manuscript dealing with carbomycin because "the paper is extremely conservative" and besides not much emphasis was being put on the drug by the Pfizer sales planning group. A book on Terramycin might be more favorably received, however. The following year, a book on Terramycin was published by MD Encyclopedia.[12]

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[8] See *ibid.,* Part 23, 12260, 13078.

[9] For an account of Welch's earnings see *ibid.,* Part 23, 12323.

[10] See *ibid* , 12261-86, also 12949-50.

Martí-Ibáñez and Welch felt it necessary to keep a semblance of objectivity to their work, turning down a request by Pfizer to substitute their trade name "Terramycin" wherever the generic name "oxytetracycline" appeared in the monograph.[13] But the monograph did appear under Pfizer's trade name with its generic name in parenthesis, prompting a reviewer to comment: "The book tries to sell Terramycin rather than critically appraise it. . . ."[14]

The author of the monograph on Polymycin, another volume in the series, was upset by the commercialization of his manuscript at the hands of Welch as editor. He wrote Martí-Ibáñez: "I am quite unhappy about your repeated reference to Pfizer products—these were not in my manuscript. . . . They give the impression that the book is written for the benefit of Charles Pfizer and Co., rather than for physicians."[15]

By 1953, the first journal, now named *Antibiotics and Chemotherapy,* had become a financial success. Although the paid circulation of the journal was small (only 3,000 copies a month at the end of the decade),[16] Welch and Martí-Ibáñez had found other ways to make their journal profitable. The journal made money in three ways: (1) advertising revenues from drug companies, (2) the sale of reprints to companies, and (3) payments for the addition of extra pages.

Later investigation revealed that MD Publications realized a total of $309,898 from advertising revenues in its journals from 1953 to 1959. But surprisingly the sale of reprints was far more lucrative, bringing in total sales of $685,760. Obviously major drug companies found reprints published in a journal edited by the FDA's top antibiotics regulator extremely valuable. The total revenue resulting from extra page charges amounted to $69,454.[17] Far from receiving just an honorarium, Dr. Welch was to receive 7½ percent of the net advertising revenues, and most interestingly, a 50 percent cut of net income from the sale of reprints as well as 25 percent of the extra page revenue.[18]

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[11] For a list of their books see *ibid.,* 13062.

[12] See letter, Chas Pfizer & Co., Inc , to Martí-Ibáñez, Feb. 4, 1955, *ibid* , 13156.

[13] Letter, Martí-Ibáñez to George E. Peabody, Feb. 15, 1956, *ibid.,* 12480.

[14] *Ibid.,* 13053. The review appeared in the *Archives of Internal Medicine,* Aug. 1957.

[15] See letter, Ernest Jawetz to Martí-Ibáñez, Feb. 7, 1956, *ibid.,* 13025.

[16] *Ibid.,* 12635.

Welch, from 1953 to 1960, earned a total of $287,142.40 for his editorial efforts. Of this sum the largest part came from the journals, some $224,016.70. At this rate, he was averaging over $35,000 a year with his worst year at a little over $13,000 and his best at over $50,000.[19]

With the continued growth of their journal, Martí-Ibáñez decided that it would be desirable to start a second journal. *Antibiotics and Chemotherapy* would continue to focus on laboratory and *in vitro* reports, but a new journal was needed to bring papers of a more clinical nature directly to physicians. With this aim in mind, a second journal, first called *Antibiotic Medicine,* was created in 1954. But after a year of publication the second journal was having trouble establishing a readership. It was decided to change the name of the journal to *Antibiotic Medicine and Clinical Therapy* which would broaden the editorial content of the journal, therefore making the journal more attractive to a wider range of advertisers. The journal would also become a controlled circulation periodical sent free to 60,000 doctors on a trial basis for a year and a half, after which some 23,000 doctors opted to continue to receive the journal on a complimentary basis.[20] In October 1956, Martí-Ibáñez attempted to market a British edition of their second journal, *Antibiotic Medicine and Clinical Therapy.* After only one year of existence, the British edition was discontinued due to lack of advertising support or subscription revenue.[21]

The difficulties faced by Welch and Martí-Ibáñez in winning acceptance for their new magazine reveal the length to which the two would go to prejudice the journals' editorial content to satisfy the advertisers. Evidently some question was raised by at least one concerned person regarding the ability of the journal to maintain its objectivity. Dr. Harry Dowling of the University of Illinois Medical School, a member of the editorial board of both journals, questioned what effect transforming the journal into a controlled circulation periodical might have on its editorial policy. Martí-Ibáñez assured Dowling, "We will carefully preserve the good scientific standing and the recognition that the journal has earned. . . . "[22] But Dowling's fears were very well founded.

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[17] *Ibid.,* 12678-79.

[18] See *ibid.,* Part 22, 11937.

[19] *Ibid.,* Part 23, 12678.

[20] *Ibid.,* 12356-66, 12950.

[21] *Ibid.,* 12680

Clearly the dependence of the journal on advertising and reprint revenues prejudiced the editorial policy, both in terms of article contents and editorial statements. Martí-Ibáñez clearly saw the American and British version of AM&CT as a forum in which manufacturers could publish clinical studies they had sponsored. In a letter to Welch, Martí-Ibáñez pointed out that the journal offered a sponsoring company "the opportunity to publish . . . any important clinical papers" as well as "important news about its products" in a special clinical newsletter section. Although he continued "it would be better for the sponsoring company not to announce to the readers that they are sending the journal . . . as this would somehow weaken the impact of their papers in the journal."[23]

In the American edition, Welch evidently made a practice of allowing advertisers to review editorials *before* they were published, soliciting their comments as well as reprint orders on upcoming editorials.[24] Likewise the scope of the journal was widened beyond antibiotics to include hormones, vitamins, and other chemotherapeutic agents in the hopes of attracting greater advertising.[25] One company promised increased advertising if the journal promised "that there will be articles on vitamins and nutrition."[26]

Invariably, critics noticed the declining scientific quality of the journal and questioned the rigor and objectivity of its content. One critic wrote, "I have been so disappointed with many of the articles . . . (T)here have been far too many with little or no scientific merit. This is not only my own opinion, but it seems to be shared by all with whom I have discussed the subject, and there have been a good many." The writer was particularly disturbed by an article discussing antibiotic-vitamin combinations.[27]

In addition to their book and journal publishing ventures, Welch and Martí-Ibáñez also arranged an annual antibiotics symposium to be jointly sponsored by Martí-Ibáñez's MD Publications and the Food and Drug Administration. From 1953 to 1957 the symposium, which was chaired by Dr. Welch, received the blessing of the FDA. The proceedings were then collected and published as the "Antibiotics Annual" by none other than Medical Encyclopedia, the firm in which Welch owned a half interest.[28]

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[22] See letter, Martí-Ibáñez to Harry Dowling, June 15, 1959, *ibid.*, 12490-91.

[23] See letter, Martí-Ibáñez to Welch, April 13, 1956, *ibid.*, 12426.

[24] See letters, *ibid.*, 13166, 13174.

[25] *Ibid.*, 13172-73.

[26] *Ibid.*, 13172, also see 13179.

[27] See letter, William W. W. Kirby to Welch, July 13, 1956, *ibid.*, 13191-2, also see 13206-07 and 13250.

As with their other endeavors, Martí-Ibáñez was not bashful at all regarding manipulating the symposium to the advantage of large drug companies, therefore boosting sales of the "Antibiotics Annual" and reprints from it. In a long letter to Welch, outlining plans for the second symposium, Martí-Ibáñez commented, ". . . we have a unique opportunity to slant the papers of the Symposium in whatever direction we feel will be most useful to the audience of our publications." Among his many plans for the symposium, Martí-Ibáñez envisioned an increased number of "official" cocktail parties hosted by large drug companies. No wonder that one doctor returning from a trip to Europe reported, "The Europeans have a strong feeling that our Antibiotics Symposium is little more than a parade of new products and testimonials . . . without first class scientific data. . . . "[29]

By the mid-1950s, elements within the drug industry itself were becoming concerned regarding Welch's outside financial activities. In June of 1956, John Connor, Chairman of the American Drug Manufacturers Association's committee on FDA-NIH Relationships, expressed concern to HEW secretary, Marion B. Folsom, and commissioner of the FDA, George Larrick. The following month Connor met with Welch and Dr. A. H. Holland, medical director of the FDA, to discuss the matter. Welch again assured all parties that he received only an honorarium for his editorial services and that he did not make any effort to encourage the industry to use his journals for advertising purposes.[30]

Welch evidently felt that he had convinced Connor. Connor, however, was far from satisfied; he thought that Welch had agreed to state in a letter what he had told Connor regarding his outside activities. Martí-Ibáñez and Welch exchanged letters outlining Welch's activities, but the letters were left in HEW files and not distributed publicly. Connor felt Welch had reneged on his promise to publish his letter of explanation. In a last effort to clear the air, Connor urged that the industry group place the matter before Secretary Folsom and Larrick for final action. Connor commented, "My own view is that other committee members will be quite surprised and shocked at the growing extent of Henry Welch's personal profitable enterprises."[31]

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[28] *Ibid.*, 12636-37.

[29] See letter, Martí-Ibáñez to Welch, March 10, 1954, *ibid.*, 13022-24 and letter, William P Boger to Welch, June 3, 1959, *ibid.*, 13031-32.

[30] Chronological Summary A Inquiry by Mr. John Connor, American Drug Manufacturers Association, Respecting Outside Activities of Dr. Welch and Responses of FDA Thereto (Undated). National Archives, Washington, D.C.

The industry group, however, felt that they had done all they could to bring the problem to the attention of HEW-FDA authorities. Despite the industry efforts, FDA management apparently felt it unnecessary to press Welch on the matter any further ignoring Connor's warning that it was "unsound for an important government official in a position like Dr. Welch's to have outside business interests that depend for their success on the financial support and backing of the very industry members whose activities he regulates or controls to such an important extent."[32]

Later investigation was to reveal how far Welch would compromise his scientific standing to benefit himself financially. In the mid-1950s a debate was taking place concerning the so-called synergistic effect to be derived from the use of combination drugs. In his opening remarks at the 1956 Antibiotics Symposium, Welch threw his support behind the use of combination drugs marketed in fixed ratios, heralding the arrival of "a third era of antibiotic therapy." Welch's advocacy of combination drugs caused quite a controversy at the symposium, spilling over into the editorial pages of his journals. Welch reprinted his symposium endorsement of combination drugs as an editorial in *Antibiotic Medicine and Clinical Therapy*. This action prompted Dr. Maxwell Finland to continue criticism that he, as well as others, had raised regarding the use of antibiotics in fixed combination. In a strong editorial in a subsequent issue of Welch's journal, Finland charged that "much of the clinical information presented at the symposium had the sound of testimonials rather than carefully collected and adequately documented scientific data." He further warned that "scientific publications have the duty to protect the medical profession and the public against the abuse of preliminary scientific information. . . . "[33]

In the following year, Welch was so determined to back up his endorsement of combination drugs that he put the FDA's own antibiotic research team on the job of demonstrating the synergistic powers of certain antibiotic mixtures. The research team's results were presented at the next year's antibiotic symposium.[34]

[31] Letter, John Connor to Dr. Karl Bamback, Sept. 13, 1956, National Archives.

[32] Chronological Summary A Op. cit.

[33] For a copy of Welch's opening remarks see Administered Prices, Part 23, 12844-45, for essentially the same statement in his journal, see pp. 12846-47. For Finland's editorial see, 12925-28.

[34] See *ibid.*, 12860-80 For the results see *ibid*., 12881-92.

Subsequent investigations revealed at least one major reason for Welch's keen interest in combination drugs. Senator Estes Kefauver's investigation into the drug industry showed that Welch had allowed Charles Pfizer and Co. to edit his opening remarks to be delivered at the 1956 Symposium.

Members of Pfizer's advertising staff inserted into Welch's speech the phrase "a third era of antibiotic therapy" which the Pfizer staff had previously decided would be the theme of the upcoming campaign for their new combination drug, Sigmamycin (a combination of oleandomycin and tetracycline). Dr. Welch's opening remarks, including the reference to "a third era of antibiotic therapy," were delivered at the symposium and were included in that year's *Antibiotic Annual.* Subsequently Pfizer purchased over 260,000 copies of reprints of Dr. Welch's opening remarks from his company, Medical Encyclopedia, Inc., for distribution at home and abroad.[35]

Due to some questioning of the desirability of the FDA's jointly sponsoring the Antibiotics Symposium with a private company, the agency ended its sponsorship after 1957. Welch, however, was allowed to remain chairman of the symposium, and FDA personnel were authorized to participate.[36] FDA management remained oblivious to Welch's financial dealings. The agency continued to accept Welch's statement that he received only an honorarium, and no effort was made to determine if he profited from advertising or reprint revenue.

Finally, in February 1959, John Lear, science editor of the *Saturday Review,* broached the subject of the possibility of conflict of interest regarding Welch's dual roles as regulator and editor. In a private interview with Welch, Lear pressed Welch about his financial arrangements. Welch again claimed that he received only an honorarium for his efforts, and he did not intend giving up his editorial position.[37]

The Lear article brought the question of conflict of interest into the public eye. As a result of the article and a number of letters from interested congressmen as well as queries from the press, HEW Secretary Arthur Flemming began looking into the matter. In the spring and early summer the investigation was slowed when Dr. Welch suffered a heart attack. By May Flemming had determined that the matter could only be settled by writing new policy regarding outside activities. Top FDA-HEW officials now began studying whether honorariums, advertising revenues, and sales of reprints were common practice in scientific publishing. But still Welch was being treated with kid gloves. Top FDA management refused to ask Welch the really hard questions: namely, how much he actually received and what was the formula for his payments.[38]

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[35] *Ibid.,* Part 22, 11967-70, 11997, 12014-15.

[36] *Ibid.,* Part 23, 12561, 12585, 12951.

[37] John Lear, "The Certification of Antibiotics," *Saturday Review,* Feb. 7, 1959, 43-48.

As late as June 1, 1959, the FDA still had no clear understanding as to how the journals were financed. Larrick, on a speaking trip to Florida, stopped to visit Welch who was recuperating in Miami. Only then did Larrick learn that the *Journal of Antibiotic Medicine and Clinical Therapeutics* was a controlled circulation journal whose principal revenues came from advertising and reprints. But Larrick was misled by Welch's statement that the journal consistently lost money. Larrick, ever reluctant to push Welch, failed to determine that it was the first journal which was the really lucrative vehicle.[39]

By October 1959, Secretary Flemming had formulated new policies greatly tightening outside activities, and thus requiring Welch to resign his editorial position and sever all ties with Medical Encyclopedia. In his press conference announcing the changes, Flemming, however, complimented Welch for being "one of the outstanding scientists at the present time"; he further stated, "No one has intimated any actual conflict of interest."[40]

It took the Kefauver investigation into the Welch case in May and early June of 1960 to reveal finally the degree to which Welch had indebted himself to major drug manufacturers. In turn the Kefauver investigation clearly demonstrated the lengths to which Welch had gone to endorse combination drugs for the benefit of Pfizer.[41]

A week before the Kefauver committee released the real amount of Welch's "honorarium," Welch filed for retirement on grounds of disability. The day after the release of the Kefauver findings (May 18), Welch, under orders from Secretary Flemming and Larrick, resigned. There was no way to deny him his federal disability pension which had been granted before the disclosures were made.[42]

The Kefauver revelations alerted Flemming to the possibility of further cases of conflict of interest in the agency and to the need to revamp the agency's regulatory powers, especially regarding drugs.

Two outside committees were appointed to probe the workings of the FDA to evaluate the performance of the agency. A panel of distinguished scientific experts reviewed the policies and procedures of Welch's Antibiotic Branch and the New Drug Branch generally giving them an acceptable rating. But the panel also pointed out that the agency needed to increase its statutory powers in areas concerning the regulation of drug advertising and the control over the proof of drug efficacy. Most importantly the agency needed the proper budgetary allowances to keep abreast of the most recent advances in its regulatory field.[43]

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[38] Administered Prices, Part 23, 12951, 12959-63, for copies of congressional inquiries see 12969, 12975-82

[39] Memo, George P. Larrick to Charles Miller, June 1, 1959, *ibid.*, 12964.

[40] *Ibid.*, 12952, 12966.

[41] The investigation into the Welch affair can be found in *ibid.*, Part 22, with a mass of supporting documents in Part 23.

[42] *Ibid.*, Part 22, 12086-88.

A second committee spent six months trying to locate other possible conflict of interest cases and determining if the agency worked too closely with the drug industry. A careful examination of key FDA employees revealed that no present employee of the FDA presented a potential conflict of interest problem. But the experience of being required to divulge one's personal finances and having to prove one's integrity had a damaging effect on morale in the agency. The second committee did find, however, that due to increased responsibilities and decreased resources, the FDA in the fifteen years since the end of the war had moved too close to the drug industry. The committee felt that the agency needed to depend less on industry self regulation and act more aggressively in the consumer's interest.[44]

In the end, the Welch scandal proved to be an isolated case. But the episode did force the agency to revitalize its regulation of drugs, leading to the most comprehensive revision of the food and drug law since 1938. Indeed in the aftermath of the passage of the Food and Drug Amendments of 1962 (the Kefauver-Harris Amendments) the agency has been accused of being overly cautious in its regulation and introduction of new drugs.

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[43] For the full report of this investigation see: *National Academy of Sciences–National Research Council Report of Special Committee Advisory to the Secretary of Health, Education and Welfare to Review the Policies, Procedures, and Decisions of the division of Antibiotics and the New Drug Branch of the Food and Drug Administration* U.S. Congress, Senate. *Drug Industry Antitrust Act Hearings before the Subcommittee on Antitrust and Monopoly of the Committee on the Judiciary on S. 1552,* 87th Cong., 1st and 2nd sess., (1961), Part 2, 459.

[44] For the second report see "Report to the Secretary of Health, Education, and Welfare Concerning the Food and Drug Administration," *ibid.*, 471-72, 474.

NEW YORK NEUROLOGISTS AND THE SPECIALIZATION OF AMERICAN MEDICINE*

BONNIE ELLEN BLUSTEIN

Specialization is an outstanding feature of late twentieth-century medical care; it was already an important issue among American physicians a century ago. In 1884, for example, the editor of the New York *Medical Record* declared that "the increase of specialists and of special departments in medicine is the most prominent feature of the medical history of today."[1] However, the specialization of American medicine has not received adequate attention from medical historians; the best study is still the late George Rosen's suggestive essay on ophthalmology, published thirty years ago. Ophthalmologists, as Rosen demonstrated, were able to carve out a niche for themselves by developing superior technical skill in a limited area of practice. Concepts of disease specificity and localization developed in Europe earlier in the nineteenth century made this endeavor plausible. The rapid growth of cities after the Civil War, New York most dramatically, made it practicable in America. A large immigrant population with high morbidity provided ample clinical material for prospective specialists, and concentrations of more prosperous city dwellers provided a market for the services of specialists in private practice. Meanwhile, improved communication among physicians favored the growth of specialty societies.[2]

Many general practitioners of the 1870s and 1880s resisted specialism as a challenge both to their conception of medicine as a unitary field, and to their relative social and economic status. For example, an 1881 editorial entitled "Specialism on the Rampage" declared that "what the profession needs at the present is to put down the brakes on specialism. We notice the appointment of a very worthy physician in an Eastern city as 'Neurologist of the Hospital,' which title he assumes in writing as an author. Cannot some other specialties be created to give positions to other aspiring gentlemen? Why

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[1] "Specialism in the country," *Med Rec.*, 1884, *25* 126. Note that "specialism," not "specialization," was the term commonly used in the nineteenth century.

[2] George Rosen, *The Specialization of Medicine with Particular Reference to Ophthalmology* (1944; rpt. New York· Arno Press, 1972).

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not have a *Pneumatologist* to attend to the lungs—a *Thermatologist* to observe temperature—a *Narcotizer* to see that the patients sleep well—a *Defecator* to attend to the bowels? and so forth." An eastern physician asserted in 1886 that "the specialist . . . flaunt[s] in front of the hard-working general practitioner of years the idea that he is not competent to do what the self-styled specialist can do. This is folly . . . and the specialist must go. We have no use for them."[3]

As contemporaries were well aware, however, it was becoming more and more difficult for the general practitioner to keep up with the latest advances being made on so many medical fronts. "If physicians would understand what they are dealing with," one commentator on ophthalmology noted as early as 1866, "they must be able either themselves to use these instruments or if (*ars longa, vita brevis*) proper skill in such niceties cannot be attained, they must ask the help of some professional brother, who, perchance, may bear the somewhat questionable but not unworthy distinction of being a specialist." Twenty years later the *Medical Record* reported that "specialism has been taken up enthusiastically by thousands of our young men. It has been received rather frigidly by the elders of the profession, but without any overt opposition. . . . [I]t is demanded by the public and is imposed upon the doctors by the extent of medical science and the difficulties of mastering the technicalities of the medical art."[4]

A specialist like the ophthalmologist, who possessed recognizably superior skills and probably did not limit his practice exclusively to his specialty, could function within traditional professional patterns of consultation and referral. Not all specialties, however, followed the path taken by opthalmology. More threatening to the general practitioner were the specialists who claimed as their domain, not the most difficult cases of a particular type, but all cases pertaining to a class of people: gynecologists, for example, or pediatricians. Neurology, as it was practiced in New York in the decades after the Civil War, serves as a useful example of this second type of specialism: its leading practitioners defined their field so as to encompass a wide range of medical concerns—such as dyspepsia, insomnia, aches and pains, and general malaise—all staples in the practice of any family physician. As late as 1890, the *New York Medical Journal* noted approvingly that the New

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[3] *Pacific Med & Surg. Jour.*, 1881, *24:* 273; "The Proposed Congress of American Physicians and Surgeons," *New Eng. Med. Monthly*, 1886, *5:* 511.

[4] Rev of *Etude ophthalmoscopique sur les altérations du nerf optique, et sur les maladies cérébrales dont elles dépendent*, by X. Galezowski, and *Du diagnostic des maladies du système nerveux par ophthalmoscopie*, by E. Bouchut, *New York Med. Jour.*, 1866, *3:* 140-41; "An Englishman's Plea for Specialism," *Med. Rec.*, 1885, *28:* 72.

York neurologist Edward C. Seguin, lecturing in Toronto, "was wise not to confine himself . . . to the narrow limits of neurology. What he said . . . shows by how broad a path neurology traverses the field of general medicine."[5]

Neurologists were among the most conspicuous of the New York specialists. By 1875, New York's two neurological societies boasted over 100 members, including prominent generalists like S. Oakley Vanderpoel and specialists in other medical fields like the Jacobis (pediatrics), the Sayres (orthopedic surgery), J. Marion Sims (gynecological surgery), and D. B. St. John Roosa (diseases of the ear).[6] Well-known neurologists like George M. Beard, William A. Hammond, and Edward C. Spitzka were also leading members of New York's medico-legal and anthropological societies. As their medical opponents complained, the names of these men appeared all too frequently in the daily press: they were interviewed about legal cases in which they had testified, quoted on social issues, and mentioned in the society columns. In this context their credentials as medical school professors and as attending physicians to an array of hospitals and dispensaries were sure to be noted. Dr. C. E. Nelson, a bitter opponent of specialism, expressed a common and not unfounded grievance when he stated that "private doctors are not allowed to advertise by the code of ethics; but doctors who get themselves attached to public institutions, are allowed full sway as to advertising." But advertising paid: Hammond, for example, reportedly had a practice worth well over $50,000 a year at the peak of his career.[7]

In its narrowest sense, neurology dealt with organic disorders like paralysis, locomotor ataxia, and chorea; such syndromes filled the bulk of Hammond's *Treatise on the Diseases of the Nervous System* (New York, 1871), the first important American neurological text. American physicians could take pride in the important contributions their neurological compatriots were making to a still overwhelmingly European tradition of medical science, such as the path-breaking treatises by S. W. Mitchell, G. R. Morehouse, and W. W. Keen.[8] The status of neurology as an important independent branch of medicine was formally recognized by 1870, with the creation of professorships for nervous diseases in New York's leading medical colleges.[9] And as long as neurologists emphasized organic and uncommon conditions, general physicians were willing to acknowledge neurological expertise.

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[5] "Dr. Seguin's Toronto Lectures," *New York Med. Jour.*, 1890, *51*: 609.

[6] New York Neurological Society [Minutes] 1874-1932, MS, New York Academy of Medicine.

[7] "Professional Advertising," *Planet*, 1883, *1*: 10-11, Webb Haymaker, *The Founders of Neurology* (Springfield, Ill.: C. C Thomas, 1953), p. 297

[8] *Gunshot Wounds, and Other Injuries of Nerves* (Philadelphia: Lippincott, 1864) and *Reflex Paralysis* (Washington: U.S. Government Printing Office, 1864). For general discussions of the significance of American neurological work, see S. E. Jellife, "Fifty Years of American Neurology: Fragments of an Historical Retrospect," in *Semi-centennial Anniversary Volume of the American Neurological Association* (Albany,

For even this aspect of neurology, it is important not to overestimate the role of technical innovation in therapeutics in establishing the neurologists' special credentials. Many organic diseases of the nervous system are still considered degenerative and irremediable; it is unlikely that the bromides, galvanism, "nerve-stretching," and chloral hydrate employed by neurologists a century ago would have provided them with a margin of success sufficient to support a specialist reputation.[10] A large portion of their recognized skill rested on the accuracy of their diagnoses. Nevertheless, neurologists contended that scientific methods of investigation would ultimately produce greater knowledge, and perhaps even cures. In 1879, for example, Hammond exhibited a case of glosso-labio-laryngeal paralysis to his class at the University Medical College and told the students that "regarding the treatment of the condition I have nothing whatsoever to offer and nobody else has any treatment to offer. . . . In spite of our helplessness in this affection I am glad to say that our knowledge of the diseases of the nervous system and of their proper treatment is improving."[11]

However, the field of neurology reached far beyond organic disease of the nervous system. Mind itself, neurologists asserted, was to be understood as a physical phenomenon, a function or product of the brain and perhaps even of the spinal cord. Hammond, enthusiastically reviewing Henry Maudsley's *Physiology and Pathology of the Mind* for *Nation* in 1867, commented that

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N.Y., 1924), pp. 386-438; and L. C. McHenry, *Garrison's History of Neurology* (Springfield, Ill.: C. C. Thomas, 1969), pp. 326-38.

[9] Bellevue Hospital Medical College created a Professorship of Nervous and Mental Diseases for Hammond in 1867, and E. C. Seguin became Professor of Neurology in the College of Physicians and Surgeons in 1870. The Medical Department of the University of the City of New York created a similar position for Charles C. Ives in 1873; M Gonzalez Echeverria had been Clinical Professor of Nervous Diseases there from 1869 to 1872. The first American chair of neurology was probably that created at Harvard in 1864 for C.-E. Brown-Séquard.

[10] Neurologists themselves expressed skepticism about the efficacy and safety of remedies in vogue. See Landon Carter Gray, "Electrotherapeutics and the American Neurological Association," *Med. Rec.*, 1879, *16:* 237-38; and his, "The curability of locomotor ataxia," *New York Med. Jour.*, 1889, *50:* 533-42, in which he refers to the method of treatment by suspension as "the latest neurological fad" and regrets that it was brought to the U.S. by "the sensationalism of the New York 'Herald.' " By 1890 this fad had passed; see "The mechanical treatment of locomotor ataxia," *New York Med. Jour.*, 1890, *5*· 265-66

[11] W. A. Hammond, "A Clinical Lecture . . . Delivered at the Medical Department of the University of the City of New York," reported for the *Hospital Gazette*, 1879, *6* 113-16.

"whether in health or disease, the mind is to be studied from a purely material standpoint, and not as a mysterious principle to be looked upon with awe as something entirely beyond our reach. There is no one feature of cerebral action which we may not hope to understand." George Beard asserted that insanity was as much a physical ailment as smallpox or a broken leg.[12] The clinical neurologist, with his scientific knowledge of physiology and pathology, therefore considered himself the most competent person to treat the insane patient.

Such claims led to a well-known controversy with the persons who already had a monopoly on the professional care and treatment of the insane, superintendents of insane asylums. In the public sphere, an active group of neurologists allied with other reformers to attack alleged abuses which they claimed were prevalent in asylums. Spitzka's paper on "The Study of Insanity Considered as a Branch of Neurology; and the Relations of the General Medical Body to this Branch," read before the New York Neurological Society in March, 1878, sparked the formation of a committee on asylum abuses, chaired by Hammond. The Society, acting on the recommendations of this committee, began to lobby in the state legislature and to try to mobilize other medical men to support asylum reform. When Spitzka read a second paper on the subject in October, the Society's rules were suspended to permit newspaper reporters to attend the meeting. The Neurological Society remained active in the asylum reform movement until the end of 1880, when this work was taken up by the newly-formed National Association for the Protection of the Insane and the Prevention of Insanity, of which Beard was a leader.[13] More fundamentally, the neurological view that insanity was a physical disease like any other implied that it could be treated by the ordinary private-practice physician, at least in the cases of patients who were able to pay for such care. In 1876, for instance, Hammond stated that "it is not a matter of doubt that many insane persons are sent to lunatic asylums who could with regard to every consideration affecting their comfort and health be better attended to in their own homes under the care of the family physician." This opinion was later repeated before the New York and Connecticut State Medical Societies.[14]

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[12] *Nation*, 1867, *5*· 86; cf. an unsigned review of the same book in Hammond's *Quart. Jour. of Psychological Medicine and Medical Jurisprudence*, 1867, *1*· 326-36. See also Charles E. Rosenberg, "The place of George M. Beard in nineteenth-century psychiatry," *Bull. Hist Med* , 1962, *36*. 247.

[13] New York Neurological Society [Minutes]. For a note on sources on this controversy, see Charles E. Rosenberg, *The Trial of the Assassin Guiteau* (Chicago & London· University of Chicago Press, 1968), pp. 275-76 For a summary of the dispute from a psychiatric point of view, see D. S Werman, "True and false experts: A second look," *Am. Jour Psychiatry*, 1973, *130*· 1351-54.

Beard and Hammond not only offered their services for the outpatient treatment of the obviously insane; their materialist conception of mind further implied that a whole class of persons suffering lesser mental symptoms also might usefully consult a neurologist. Insomnia, for example, stood at the head of Beard's long list of common symptoms of neurasthenia, and had been of special interest to Hammond at least since 1860. More generally, as Charles Rosenberg has shown, Beard legitimated functional nervous disorder—"neurasthenia"—as a bona fide medical concern by providing it with an "earnestly somatic" pathology.[15] While Hammond's physiological and pathological explanations often differed from Beard's, his efforts followed similarly materialist lines. Their fundamental agreement, despite their habitual bickering, was dramatically demonstrated in 1881 when the integrity and reliability of Beard's hypnotic experiments were challenged by leading members of the British medical profession. Beard's critics contended that mental processes were purely subjective; the only proof that a person had actually been hypnotized was his own assertion. Since Beard's subject was personally unreliable, they argued, his results were unproven and perhaps even deliberately fraudulent. Hammond immediately came to Beard's defense, declaring that hypnotic trance was a physiological condition and hence susceptible to objective verification; the subject's character was therefore irrelevant. Neurologists like Charcot or Beard, Hammond argued—not general physicians or even medical psychologists like Beard's distinguished critics J. C. Bucknill and Crichton Browne—possessed the expertise with which to evaluate the experiments.[16] Meanwhile, Hammond's and Beard's spectacular demonstrations of hypnotism received much publicity in both the medical and the popular press.

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[14] W. A. Hammond, *A Treatise on the Diseases of the Nervous System*, 6th ed. (New York: Appleton, 1876), p. 376 Cf. his, "The non-asylum treatment of the insane," *Trans. Med. Soc. of the State of New York for the Year 1879*, pp. 280-97; and his, "The construction, organization and equipment of hospitals for the insane," *Neurological Contributions*, 1880, *1*, no. 2: 1-25. This paper was read by invitation before the Connecticut State Medical Society, May 29, 1879, but apparently was withheld from its *Transactions*

[15] G. M. Beard, *American Nervousness* (New York: Putnam, 1881), pp. 7-8; W. A. Hammond, "On sleep and insomnia," *New York Med Jour.*, 1865; *1*. 88-101, 182-204; his, *On Wakefulness* (Philadelphia: Lippincott, 1866), his, *Sleep and Its Derangements* (Philadelphia: Lippincott, 1869; 2nd ed. 1873; 3d ed. 1883); his *Sleep, Sleeplessness and the Derangements of Sleep, or, The Hygiene of the Night* (London Simpkin, 1892); and his, "Insomnia and recent hypnotics," *North American Rev.*, 1893, *156*. 18-26. See also Rosenberg, "George M. Beard," pp. 249-53.

[16] J Crichton Browne, "Dr. Beard's experiments in hypnotism," *Brit. Med. Jour.*, 1881, *2*. 378-79, W. A. Hammond, "A word for Dr. Beard," *Med. Rec.*, 1881, *20* 446-47; and subsequent correspondence in both journals.

The neurologists' eagerness to treat functional nervous disorders effectively extended the scope of medical work; it also mobilized the skepticism of other clinicians. For example, in 1881 a daily newspaper interviewed several New York physicians on the subject of seasickness, including the prominent generalist Alonzo Clark and several neurologists. "Dr. Clark recommends a washbowl, Dr. Beard bromization, and Dr. Hammond chloroform and bromides," reported George Shrady of the *Medical Record,* who commented that "without entirely disregarding bromides, we think highly of the washbowl."[17] It seems likely that the New Yorker anxiously contemplating an ocean voyage would have chosen to consult a neurologist, from whom she or he could expect both sympathy and a prescription. The same might well have been true of the well-to-do dyspeptic, insomniac, or "nervous" patient.

Contemporaries charged, in fact, with much justification, that the class of patients which neurology attempted to appropriate included virtually all middle-class Americans. In 1876 Whitelaw Reid, a prominent lawyer and editor, told the assembled alumni of University Medical College that Hammond "is best-known to us all for his well-known theory that all men are insane." One medical reviewer of Hammond's *Treatise on Insanity* (New York, 1883) pointed out that "it seems to have been the intention of the author to widen the sphere of insanity as much as possible." Another remarked that "the history of the human race might be written under the caption of psychiatry so defined."[18] And Beard's popular monograph on *American Nervousness* did almost precisely that. "The history of the world's progress from savagery to barbarism, from barbarism to civilization," he wrote, "is the history of increase in average longevity, corresponding to and accompanied by increase of nervousness." For Beard, "each case of neurasthenia in the United States was an additional bit of evidence for the superiority of American institutions."[19]

Beard was not alone in viewing nervousness as peculiarly American. Hammond told the readers of *Galaxy* magazine in 1868 that "Americans are preeminently an emotional people, and we work our brains and nerves as no other nation has worked them since the world began. It is therefore no strange thing that insanity and nervous affections are more common in the United States than in any other country, and that emotional diseases—and chief among them dyspepsia—are so widespread that the individual who is not affected with some one of them is looked upon as a marvel in anthropology." Twenty-five years later the St. Louis neurologist C. H. Hughes told the first Pan-American Medical Congress that "America breeds and develops neurologists as the water breeds and develops fishes. . . . It cannot yet be said that we are a neuropathic people, though we are tending that way; but neurology is advancing with equal pace with neuropathic breakdown, and will, it is hoped, ultimately enlighten and save the people from their neuropathic sins." Neurology, in short, did more than offer middle-class Americans serious attention and therapy for their multifarious neurasthenic ills. These very ills were a sign of national progress, neurologists claimed, and neurological specialists should be counted among the scientific leaders of the age. "If . . . nervous diseases are to be a measure of our civilization," declared Beard, "we yet have this assurance;—that science, with keen eyes and steps that are not slow, is seeking and is finding means of prevention and of relief."[20]

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[17] *Med. Rec* , 1881, *19:* 728, *Pacific Med. & Surg. Jour* , 1881, *24:* 143; see also G. M. Beard, *A Practical Treatise on Seasickness: Its Symptoms, Nature, and Treatment* (New York: E. B. Treat, 1880).

[18] University of the City of New York Medical Department, *Fifth Annual Reunion Dinner of the Alumni* (New York, 1876), p. 58; *Am. Jour of Neurology and Psychiatry,* 1883, *2:* 322-33; *Alienist and Neurologist,* 1883, *4:* 531-37.

[19] G. M Beard, *American Nervousness,* p. 287; C. E Rosenberg, "George M. Beard," p. 256. Cf. W. A. Hammond, "A lecture on sleep," *Gaillard's Med. Jour.* 1880, *29:* 125-57.

The New York neurologists did not hesitate to take their case directly to the public. "There is no doubt," wrote Hammond in 1866, "that if the great men of the profession had written more for the public than they have, quackery would not be so rampant and widespread as it is at present." Beard believed that the task of the physician was "not only to heal, but to enlighten, to make of himself '*a power in society*.' " These men honestly thought that their scientific truths would benefit the general population; at the same time, they were well aware that public appeals could bolster their own position. "You cannot afford to set yourselves above the world and to be utterly regardless of the demands of society," Hammond informed the new students at Bellevue in 1867, "You must therefore sacrifice something on the altar of expediency if you wish to be successful in a material point of view. Only take care that you preserve your love for science."[21] The popularization of their science, in fact, could help create a demand for their services, and

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[20] W. A. Hammond, "A few words about the nerves," *Galaxy,* 1868, *6:* 183; C. H. Hughes, "Address of the President of the Section [on] Neurology and Psychiatry of the First Pan-American Medical Congress," *Trans. of the Pan-American Medical Congress,* 1893, *2* 1799, G. M. Beard, *American Nervousness,* pp 290-91

[21] W A. Hammond, "Introduction," in *Notes on Epidemics for the Use of the Public,* by Francis E. Anstie, 1st Am. ed (Philadelphia: Lippincott, 1866), p. iii; for Beard, see Rosenberg, "George M. Beard," p

Beard and Hammond used the mass media to good advantage. Monographs, articles, newspaper coverage, and—in Hammond's case—even fiction brought not only their names but their neurological concepts to potential clients, publicity which must have benefited other neurologists as well. For example, the hero of Hammond's novel *Robert Severne,* who became insane through sleeplessness and overattention to his philosophical studies, could serve as a warning to many. The complex plot of *Doctor Grattan* revolved around the relation of insanity to neurological impairment, and touched on the subjects of neuralgia, headache, kleptomania, and delusions. Both novels stressed the importance of neurological expertise in the solution of medico-legal problems of insanity.[22] Meanwhile, Beard promoted his views on the causes and cure of neurasthenia in the pages of magazines such as *Appleton's Journal* and the *Atlantic Monthly.*[23] Neurologists even sent copies of their semi-popular books to the newspapers for review, a practice roundly condemned by many general physicians.[24]

Many Americans seemed ready to accept the neurologists' contentions. Popular works on health often included the idea that individuals must themselves take hygienic steps to solve their mental problems. This went together well with the neurologists' office-based practice.[25] Hammond, for instance, reportedly told a depressed and neurotic patient that his passive attitude was "all damned nonsense, and I shall write your father to send you to the asylum. Do you suppose God is going to help you and you sit down on your tail and not help yourself?" At the same time, such patients were reassured that they were receiving the most scientific and up-to-date care available. After diagnosing this same patient using blood tests, urinalysis, the ophthalmoscope, and Lombard's thermo-electric differential calorimeter, Hammond

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257. The last quotation is from W. A. Hammond, "The proper use of the mind," *Quart. Jour. of Psychological Medicine and Medical Jurisprudence,* 1868, *2* 137.

[22] W. A. Hammond, *Robert Severne, His Friends and His Enemies* (Philadelphia: Lippincott, 1867); *Doctor Grattan* (New York· Appleton, 1885) See also his, *Lal; a Novel* (New York: Appleton, 1884; rpt. 1885, 1886, 1890); *Mr. Oldmixon* (New York. Appleton, 1885), *Tales of Eccentric Life,* by W. A. Hammond and Clara Hammond Lanza (New York. Appleton, 1886); and Clara Lanza, *Mr Perkins' Daughter* (New York: Putnam, 1881).

[23] G M. Beard, "Consolation for the nervous," *Appleton's Jour* , 1878, *5*· 369-73; "Physical future of the American people," *Atlantic Monthly,* 1879, *43*· 718-28. Cf. W A Hammond, "The relations between the mind and the nervous system," *Popular Science Monthly,* 1884, *26* 1-20; and "How to rest," *North American Rev* , 1891, *153.* 215-19.

[24] See H. H Kane, "Correspondence," *American Medical Bi-Weekly,* 1881, *13.* 84-85, and the response of the editor, E. S. Gaillard.

[25] See, for example, James Rush Blake, *The Ten Laws of Health* . . . 3d ed. (Philadelphia: Lippincott, 1885), pp. 296-307. "Ninth law. Tranquil states of the mind, and adequate rest and sleep." See also W. A. Hammond, "Self-control in curing insanity," *North American Rev.,* 1891, *152:* 311-18.

"cauterized the nape of the neck, applied statical [sic] electricity to the same part and the cervical and dorsal regions generally, advised the use of ice to the nucha, and gave internally a mixture of bromide of sodium, pepsin, powdered charcoal and water."[26] Even the metaphors employed in describing the physiology of the nervous system—the dynamo, the steam engine, electric lights, the telegraph—suggested that neurological medicine was thoroughly modern.[27]

By the mid-1880s, such neurological practice seems to have established a place for itself in the public mind; it had not, however, achieved a comparable status within the medical profession. Hammond, in his 1883 address on retiring from the presidency of the American Neurological Association, "expressed some surprise that a specialty so broad and comprehensive as neurology should not excite a still greater interest than it had done." The *Medical Record,* reporting this speech, commented that "less special attention is paid to nervous diseases by medical students and by practitioners than to many other much narrower branches of medicine. Clinics for nervous diseases are but poorly attended. . . . And even in some large colleges a general practitioner is thought quite capable of lecturing on neurology." Two years later, the New York lawyer Clark Bell, editor of the *Medico-Legal Journal,* still found it necessary to defend the existence of the specialty of neurology, which had come under attack in the pages of the *British Medical Journal.* Even the neurologist C. L. Dana admitted, however, that "the incompetentness of a medical or surgical specialty is indicated, in a measure, by the variety and novelty of its therapeutic armamentarium. Judged by this test, I fear neurology would have to suffer in scientific estimation."[28]

A later generation of neurologists was even more skeptical of the broadest claims of its teachers. Frank R. Fry wrote to Smith Ely Jellife in 1924 that in the cases of the founders of their specialty in St. Louis, "there were personal inconsistencies . . . that gave them an increasing unpopularity amongst those who were trying to do consistent work in neurology, not only so, but as they became older their methods were such as to make them unpopular with the rank and file of the profession. They were all egotistically restless and in their neurological efforts little more than commercial adventurers." Similarly harsh judgments were rendered against the more flamboyant of their New York colleagues.[29]

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[26] J. G. Hopkins, "A spicy letter, in which a Georgia doctor tells what he knows about Dr. Wm. A. Hammond, of New York, and his treatment of a Georgia patient," *Atlanta Med. & Surg. Jour* 1884, n s. *1* 416; and "Dr. Hammond's reply to Dr. Hopkins," p. 485.

[27] Rosenberg, "George M. Beard," pp. 250-51; W. A. Hammond, "Brains and muscles: Their relative training and development," in *The Union College Practical Lectures (Butterfield Course)* (Schenectady, N.Y., 1895), I, pp. 263-82. Cf. "Functional dyspepsia," *Quart. Bull. of the Clinical Society,* 1885, *1:* 64-74.

[28] "Neurology and the American Neurological Association," *Med. Rec.,* 1883, *23:* 710; "Neurology as a specialty," *Medico-Legal Jour.,* 1885, *2* 108-10, C. L. Dana, "Therapeutics and Neurological Therapeutics," *Quart. Bull. of the Clinical Society,* 1886, *1* 244.

The steady progress of specialties like ophthalmology suggests that the specialization of medicine in America was, in part, a natural response by the medical profession to the increasing technical complexity of their work. Parallel examples like orthopedic surgery and oto-laryngology might bear this out. However, the case of neurology suggests a more intricate picture. Neurologists seem to have convinced the public that they would give serious consideration and the best possible treatment to complaints which the family physician might have shrugged off as "only nervousness."[30] While a few well-established and busy generalists might have been glad to refer such troublesome patients to the specialist, New York's many underemployed physicians could ill-afford the loss of business. Furthermore, there was probably some basis in fact for the frequent charges voiced by these men that specialists' dispensaries and clinics were luring patients away from the general practitioner. "Self-puffed specialists," complained one physician in 1885, "for two years past have been appropriating other persons' cases; to such an extent has this been carried, that people now come up by train from a radius of a hundred miles or more, to New York; thus cheating even country practitioners of their just due." Five years earlier a New Jersey physician signing himself "Squintum" had complained that "the dispensaries in New York had extended their limits for miles into New Jersey, and did not confine themselves to the treatment of the paupers of New York City or State." Neurological clinics, in particular, had mushroomed. In 1869 Hammond had introduced a clinic for nervous diseases (including insanity) at Bellevue Hospital Medical College. By 1883, patients could attend such a clinic at the Postgraduate Medical School or the New York Polyclinic any day except Sunday, or they could choose one at New York Hospital, University Medical College, Women's Medical College, or even at the Manhattan Eye and Ear Hospital, not to mention the New York Neurological Infirmary and the Dispensary for Nervous Diseases.[31] This does not, of course, imply that the neurological patient without means was adequately provided with medical care; it does help to explain why the "abuse of medical charity" was a perennial concern in the journal literature.

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[29] Frank R. Fry to Smith Ely Jellife, TLS, March 17, 1924, in "Collection of Unarranged, Unedited Material Anent the Semi-Centennial Volume of the American Neurological Association, Published in 1924," New York Academy of Medicine. Spitzka characterized Beard as a Barnum of American neurology, see Rosenberg, "George M. Beard," p. 258. Perhaps the most extreme comment, however, was one asylum superintendent's description of Hammond as "a moral monster, whose baleful eyes glare with delusive light, whose bowels are but bags of gold, to feed which, spider-like, he casts his loathsome arms about a helpless prey." Eugene Grissom, "True and false experts," *American Jour. of Insanity*, 1878, *35*: 35.

[30] See Herman Canfield, "'Only nervousness,'" *New York Med. Jour.*, 1896, *63*. 44-48; and the report of the meeting of the Society of Alumni of Bellevue Hospital, November 6, 1895, p. 56. See also Rosenberg, "George M. Beard," p. 247.

Even those persons who were willing and able to pay for advice more and more frequently bypassed the family doctor and consulted a specialist in his well-appointed office. It was "becoming the custom," agreed a group of prominent New York physicians, that "the sick one asks for an opinion on his own account . . . and reserves the right to choose from a multitude of councillors." The resulting breakdown of traditional relationships between general practitioners and consultants became a central issue in the New York State Code of Ethics controversy in the early 1880s and the subsequent national squabble for control of the International Medical Congress of 1887. "There are few or none who have advocated incongruous consultations in ordinary routine medical practice," declared E. R. Squibb, a leading opponent of the liberalized New Code, "The specialist is common to all the isms and pathys and quackeries of the day and of all time. His skill is the most cultivated and his successes are so definite and so easily seen that wherever a special organ is diseased it must go to him from whatever source . . . The consultations he gets are really no consultations at all. His patients are brought to him and he takes charge of them."[32] Many of the improprieties attributed to specialists—such as consulting with homeopaths and encouraging "dispensary abuse"—were also committed by leading generalists. However, specialists like the neurologists, who aggressively articulated claims of superiority over the average physician in a large proportion of his cases, were a natural target for the general practitioner's frustration and resentment. It was not unreasonable for many New York physicians to perceive such specialism, with its scientific pretensions, as unfair competition.

On the other hand, the neurologists also had a plausible justification for their actions. Medicine, they insisted, was both a scientific and a commercial enterprise. Science, like commerce, would best be served by the lifting of outmoded restrictions—that is, codes of ethics—which smacked of

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[31] C. E Nelson, "The abuses in specialist dispensaries," *New Eng. Med. Monthly*, 1885, *5:* 127, "The abuse of medical charities, and professional interference," *Med Rec.*, 1880, *17* 327, "Schedule of the various clinics to be held in New York City the coming season," *Med. Rec.*, 1883, *24:* 416-17.

[32] "How to consult," *Med. Rec*, 1882, *22:* 185, "The new Code of Medical Ethics," *Ephemeris*, 1882, *1:* 70-71. For a temperate but firm defense of specialism, see E. C Seguin, "The cultivation of specialties in medicine," *Arch. Med.*, 1880, *4:* 280-93.

"trades-unionism." A medical writer in 1881, for example, declared that "a clear line of demarkation should be drawn between trade and science. They are exactly opposite in their tendencies. . . . For the sake of illustration, trade can be represented by protection, science by free-trade." Hammond devoted much of his novel *A Strong-Minded Woman* to the defense of free-trade, while *On the Susquehanna* sharply attacked workers' strikes.[33] This stance suggested a new perspective on the widespread concern that the medical profession was losing status by "rapidly being reduced to the level of a trade." Many of New York's impecunious and struggling GPs may well have perceived the respectable role of the businessman as the only alternative to the feared and despised position of the trade-unionist. "The multitude of half-formed doctors . . . the fierceness of competition, the American passion for 'practical' and business-like methods, the haste for success, all tend to tempt younger physicians especially toward a laxity in conduct," noted the *Medical Record* in 1885; but "although the practice of medicine has already assumed many of the features of a 'business,' it is not, and never can, by honest men, be carried on just as a trade would be."[34] In this context, the successfully competitive practices of the New York specialists could be defended not only by invoking the imperatives of science and the metaphors of technology, but the ethos of the free-enterprise system as well.

The development of neurology as a specialty practice was a process with both intellectual and social dimensions. Historians like Garrison, Riese, and McHenry have concentrated almost exclusively on tracing the progress of neurological concepts, discoveries, and techniques as they appeared in the medical literature.[35] On the other hand, Rosemary Stevens has described specialism in terms of its effect on the organization and politics of health care. "By the mid-1870s," she concludes, "there was a recognized class of physicians in the cities whose prime concern was often to make money and advance themselves socially. Shrewd, practical, and often well-educated, these men . . . posed a threat to general practice both in financial terms and in terms of relative social and professional standing."[36] Still others, primarily interested in the history of psychiatry, have relegated men like Beard to the "pre-history" of that field.[37] None of these viewpoints really provides an adequate conception of what neurology meant for the people who practiced it and for the patients they treated in late nineteenth-century New York. While some of the specialties in this period may be understood in Stevens' terms as a "technocratic stratification" based on the growth of a "scientific medicine," neurology—and probably some others—cannot, although all relied heavily on their scientistic image. Closer attention to a differential typology of the specialties would provide a much fuller understanding of the critical role played by "specialism" in the redefinition of basic relationships both among physicians and between the profession and the public, in the years during which American medicine began to take on its present form.

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[33] F E Stewart, "A new medical specialty," *Med & Surg. Reporter*, 1881, *44:* 371, W. A. Hammond, *A Strong-Minded Woman, or, Two Years After* (New York. Appleton, 1885), *On the Susquehanna* (New York: Appleton, 1887). Cf. his, "On the evolution of the boycott," *Forum*, 1886, *1*· 369-76

[34] "Medicine and trade," *Med Rec.*, 1884, *25:* 555, "The moral danger of the American medical profession," *Med. Rec* , 1885, *28:* 264. Such articles were not uncommon

[35] L. C. McHenry, *Garrison's History of Neurology*, includes "References," pp. 449-69; Walther Riese, *A History of Neurology* (New York: MD Publications, 1959). Cf. J. M. Foley, "One hundred years of American neurology," *Trans. of the American Neurological Association*, 1975, *100*· 1-9.

[36] *American Medicine and the Public Interest* (New Haven and London: Yale University Press, 1971), p 49.

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[37] See, for example, N. G. Hale, *Freud and the Americans; the Beginning of Psychoanalysis in the United States, 1876-1917* (New York: Oxford University Press, 1971).

DISEASE PREVENTION IN AMERICA: FROM A LOCAL TO A NATIONAL OUTLOOK, 1880-1910*

ALAN I. MARCUS

"In many ways," declared William Osler in 1899, "a city's danger is from the country." Osler, the leading American physician at the turn of the century, knew that seemingly innocuous substances, such as milk and water, transported disease between communities. For him, consequently, effective disease prevention programs required uniform, coordinated action that was planned systematically and carried out nationally. In Osler's view prevention of disease was a national problem.[1]

Yet the notion of the interdependence of American communities was a new idea in the public health field. Just two decades before Osler delivered his warning, most Americans regarded disease as local in origin and unlikely to spread, except through personal contact, from its source to other places. Indeed, well into the latter part of the century, conventional wisdom held that disease prevention was an internal problem that the residents of each city, town, or village should and could manage for themselves. In this view the responsibility for public health fell squarely on the local community.

Even the rise of state boards of health in the 1870s did little to dislodge the primacy of the local community from public health thought. Although the creation of these boards implied an obligation on the part of the states to guard the health of their citizens, the boards' policies reflected the conviction that each community should itself handle prevention and deal with disease. By collecting vital statistics and by educating the public, the state boards sought only to identify negligent communities and to exhort them to protect their inhabitants.[2]

Much of the emphasis on the locality as the most efficient site for disease

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* The author wishes to thank Professor Zane L Miller, University of Cincinnati, Department of History, for reading this paper and for helping the author to tighten the argument

[1] William Osler, M.D , "The Problem of Typhoid Fever in the United States," *Transactions of the Medical Society of the State of New York*, (Syracuse, 1899), p 69.

[2] Like state health boards, the National Board of Health (1879-1883) did little to interfere with the autonomy of local communities. Except for the power to suppress, by quarantining foreign vessels, the introduction of disease into America, the N B H. was chartered only to gather vital statistics, notify communities of potential health threats, and encourage states to protect their citizens. See Ralph C. Williams, *The United States Public Health Service, 1798-1950* (Washington, D C. Commissioned Officers Association of the United States

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prophylaxis stemmed from notions of disease causation and dissemination. Since colonial times and particularly in the late 18th and early 19th centuries, physicians from both rural and urban America had compared disease symptoms and argued over disease-producing conditions. These etiological debates, which by and large were resolved before 1860, were so intense that not only did medical men use their professional societies and journals as forums for their views, but they also wrote numerous pamphlets and tracts as well.[3] Yet despite the diversity of opinion and the subsequent variance of their disease recommendations, the disputants agreed that responsibility for prevention rested on the locality.

The views of the most influential and voluble antagonists in this long-standing controversy can be marshalled into two main camps. The contagionists, dominant during the 17th and 18th centuries, asserted that disease originated at some point outside the locality. In some instances they went so far as to claim that disease was spawned in a foreign land, most notably the West Indies.[4] It spread from person to person through contact with infected individuals or their belongings, such as clothing or bedding. Although they hypothesized that disease was not of local origin, contagionists nonetheless put forth a simple prevention program that, while remaining consistent with their theory of disease transmission, centered on the local community. Each community, they argued, was responsible for blunting the thrust of disease and could do so merely by keeping diseased persons and potentially contaminated goods outside its boundaries or, if local borders were infiltrated, by segregating the intruders and their possessions from the rest of society. To this end, localities, often with the consent of state legislatures, created either permanent quarantine forces or, in time of emergency, designated several community members to serve in this capacity.[5]

Public Health Service, 1951), pp. 76-79, and Harry S. Mustard, *Government in Public Health* (New York: The Commonwealth Fund, 1945), pp. 50-57.

[3] The controversies over the origins and modes of transmission of the two most prevalent epidemic diseases, yellow fever and cholera, were indicative of the debates in the early 19th century. They were no less intense than the wrangling over nosology. See, for example, James Tilton, "Observations on the Yellow Fever, as it appeared at Wilmington, Delaware in the Summer and Autumn of 1798," *Med. Repository,* Ser. 1, 1799-1800, *3* 128-135, Daniel Moore, "Opinion of the Medical Faculty relative to the domestic origin of the pestilential sickness in Baltimore, during the hot season of 1800," *Med. Repository,* Ser. 1, 1800-1801, *4* 351-356, L. M. Lawson, *Cholera: Its Nature and Treatment* (Cincinnati. Robinson and Jones, 1848), pp. 1-56, and Austin Flint, "Health in Buffalo," *Buffalo Med. J* , 1853, *8*· 252-253

[4] Examples include John H Powell, *Bring Out Your Dead* (Philadelphia: University of Pennsylvania Press, 1949), pp 13-15, and John Duffy, *Sword of Pestilence* (Baton Rouge Louisiana University Press, 1966), pp. 11 and 15-16.

[5] See, for instance, William Travis Howard, Jr., *Public Health Administration and the Natural History of*

The second group, the miasmatists, held to the miasmatic theory of disease. Brought to national prominence when articulated by Benjamin Rush, the foremost late 18th-century American physician, during the Philadelphia yellow fever outbreak in 1793, the miasmatic theory gained proponents so rapidly that by mid-century it had outstripped its competitor and had become among prominent American medical men virtually the only accepted or even acceptable theory of disease causation and dissemination.[6] Boosters of the miasmatic theory postulated that disease was produced and spread locally by unsavory smells, usually in conjunction with appropriate atmospheric conditions, that emanated from decaying animal and vegetable matter. To stop accumulation of filth and other noxious substances and thereby to prevent disease, physicians, lawyers, engineers, and other sanitarians strove to drain stagnant pools of water, to secure a pure and plentiful water supply, and to dispose promptly of all sewage and garbage.

For these miasmatically based prevention programs to be effective, sanitarians, by the mid-19th century, recognized that each individual must surrender certain rights and do his part for the well-being of the entire community. Not only, preached sanitarians, did each community have a responsibility to protect the health and welfare of its citizens, but citizens had sanitary obligations to their fellow community members and ultimately the community itself. G. C. Ashmun, Health Officer of Cleveland and later President of the Ohio State Board of Health, neatly summed up, in 1886, the responsibilities of individuals to mitigate the hazards of community life. "From individual to family life," reasoned Ashmun, "is but a step to community life. And we cannot rightly expect a higher standard for the community than that of its component parts."[7]

Although sites of great compact populations seemed to exacerbate disease dangers, the individual's obligation to yield to sanitary law also extended to

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Disease in Baltimore, Maryland, 1797-1920 (Washington, D.C. Carnegie Institute, 1924), pp. 47-52 and 83-95; John Duffy, ed., *The Rudolph Matas History of Medicine in Louisiana,* Vol. 1 (Baton Rouge: Louisiana State University Press, 1958), pp. 400-403 and 412-414; and David L. Cowen, *Medicine and Health in New Jersey A History* (Princeton: D. Van Nostrand Company, 1964), pp. 88-89.

[6] For an example of the mid-century arguments put forth by miasmatists and the remaining contagionists, see *Proceedings and Debates of the Third National Quarantine and Sanitary Convention* (New York: Edmund Jones and Company, 1859), pp. 22-234.

While miasmatists in the medical profession triumphed over the contagionists, the belief in the transmission of disease through personal contact never died out completely. Rather, it somehow got appended to the miasmatic theory Consequently, sanitarians, to cover all bases, frequently established quarantines, in addition to instituting sanitary clean-ups

[7] G. C Ashmun, "Standards of health," *Ohio State Board of Health First Annual Report* (Columbus, 1887), pp. 234-235.

less densely settled country hamlets. Indeed, sanitarians were appalled by the dimensions of disease that they uncovered in rural villages where healthful living conditions seemed so easily obtainable. Yet despite the abundance of pure air, fresh food, and water, enlightened physicians and others recognized the interdependence of the villagers and stressed, as they did in cities, the sanitary responsibilities of community members to one another. Residence in any aggregation of persons, sanitarians reasoned, imposed a commitment on individuals to the welfare of their community.

Farmers, however, seemed insulated from any responsibility for the health of a larger society. With country roads in poor shape and with each farmhouse geographically distinct, farmers seemed isolated from frequent outside contact. In spite of this detachment, miasmatists emphasized the farmers' own need for adhering to sanitary principles. Even though they were situated in a most salubrious and isolated environment, there were "certain laws, certain rules" that farmers, for their own benefit, needed to heed, for, as one commentator noted, "in the matter of cleanliness, when Dame Nature is once affronted, her frown is terrible."[8]

These local community-oriented disease prevention views began to wane in the last decades of the 19th century as the notion spread among American physicians and sanitarians that bacteria were probable factors in the origin and spread of disease. As germs were implicated in disease, contact with infectious materials, materials of a very different type than those suggested by the contagionists, and infection—modes of bacterial transmission—became likely subjects for investigation. Accordingly, some Americans began exploring potential non-local environmental sources of disease, an approach that subsequently destroyed the predominantly intracommunal disease prevention emphasis.[9]

It was not until the 1920s, however, that the germ theory found universal acceptance in the American medical community. Before then, some doctors simply refused to discard the miasmatic theory. But a far more common late

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[8] Josiah Hartzell, "Disposal of dangerous waste products," *Ohio State Board of Health. First Annual Report* (Columbus, 1887), p. 199.

[9] The story of the development of the germ theory and its transmission to America is too familiar to be repeated here. See Charles Singer and E. Ashworth Underwood, *A Short History of Medicine* (New York: Oxford University Press, 1962), pp. 326-341, and Thomas N. Bonner, *American Doctors and German Universities* (Lincoln: University of Nebraska Press, 1963), pp. 110-120.

Socio-technological changes, such as the proliferation of railroads, in the late 19th century also made the interaction and interdependence of American communities both more obvious and more numerous. Perhaps the best short work that deals with these changes and their impact on American life is Samuel P. Hays, *The Response to Industrialism, 1885-1914* (Chicago. University of Chicago Press. 1957).

19th and early 20th-century response to bacteriology was to incorporate the miasmatic theory with the germ origin of disease. For example, E. V. Stoddard, a Rochester physician and chairman during the late 1870s and 1880s of the New York State Medical Society's committee on hygiene, supposed that miasmas vivified bacteria. Explaining that "in order to become active, the germ needs to pass through a certain stage of development outside the body," he noted that "the evolution of the poison seems to be certain" when germs "are allowed to remain in filthy surroundings." Stoddard's belief in the activation of bacteria by miasmas was not the only intermixture of the two views. Other physicians hypothesized that miasmas gave birth to pathogenic bacteria or that miasmas and bacteria existed and acted independently.[10] These amalgamations, like the germ theory itself, helped doom the local, self-sufficient approach to disease prevention.

Medical men were not the only Americans infected with the spirit of bacteriology. The urban public, through both articles and advertisements in newspapers as well as in the literary and the new ten-cent magazines, also read of the new science and its implications.[11] Likewise, farmers and rural villagers found out about germs, though not from the forementioned periodicals, which catered to an urban audience. Rather, they learned their bacteriology through United States Department of Agriculture publications. In the early 1890s, the U.S.D.A. started its *Yearbook,* which aimed at increasing agricultural production and improving farm life. It carried regular articles by physicians, veterinarians, and bacteriologists that broadcast the microbiological explanation of disease. In addition, the U.S.D.A. printed a series of *Farmer's Bulletins,* several issues of which were devoted to the newly realized hazards of farm life.[12]

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[10] E.V. Stoddard, "Typhoid infection of the drinking water," *Transactions of the Medical Society of the State of New York* (Syracuse, 1878), pp. 310-311. Others who tied miasmas and bacteria include Charles Gardner, "Some of the unsanitary conditions of country life," *Cincinnati Med. News*, 1884, *13:* 293-294, and A. A. Woodhull, "[Book Review]," *The Nation*, 1897, *64*· 17

As certain diseases, such as tuberculosis and cholera, became linked to specific bacteria, many doctors began to perceive an overall connection between disease and microorganisms. Consequently, physicians began to hypothesize relationships between heretofore undiscovered germs and disease. In fact, the dependence of some doctors on the bacteriological view led them, in the early 20th century, to seek and often "to find" bacterial agents and to postulate modes of microbial transmission for pellagra and infantile paralysis.

[11] Some examples of newspaper and magazine articles include *The New York Times*, January 29, 1882, p. 6, and February 22, 1883, p. 4, William Carpenter, "Disease-germs," *Popular Science Monthly*, 1881, *20*· 244-260; Cyrus Edson, "The present and future of medical science," *North Amer. Rev*. 1892, *154* 117-119; and Herman Biggs, "Discoveries in bacteriology· Their practical medical value," *The Independent*, 1897, *47*. 1292-93. For a discussion of the use of the germ theory by patent medicine proprietors, see James Harvey Young, *The Toadstool Millionaires* (Princeton: Princeton University Press, 1961), pp 144-162.

While the science of these medico-journalists often was either incorrect or fraudulent, they still served to spread the essence of the microbial view among their readers.

As was the case with the medical community, however, most turn-of-the-century Americans did not understand fully either the scientific rationale or the complex ramifications of bacteriology. In fact, most tended to ignore the theory behind the new science. Nonetheless, many laymen, as did doctors, grasped the practical implications of bacteriology. Their realization that miniscule, mobile bodies might cause and spread disease accentuated their fears of dangers from distant sources and began to break down the primacy of the locality in preventive medicine.

Growing awareness of bacteriology held crucial consequences for public health policy. As sanitarians learned of bacteriology and either accepted the new science or combined it with the miasmatic theory, their preventive efforts took on an invigorated and expanded course. Still alert to the possibility of local transmission of disease, they maintained community-based clean-up campaigns. But since they also gave microbes a role in disease, they frequently investigated possible extralocal disease sources, for microscopic germs, unlike miasmas, could be transported in food, milk, or water and conveyed from distant places as well as spread by personal contact. One of the most important areas they investigated was the condition of the milk supplies.

When budding bacteriological epidemiologists scrutinized dairies and milk supplies, these investigations revealed in a dramatic way the impact of distant localities on the health of a particular community. Prior to the late 19th century, dairying was largely an urban industry despite the intense criticism of sanitarians. They complained about the filth, odor, and overcrowding of urban dairies because they feared the miasmatic consequences of unsanitary conditions on the health of the cows and on the environment of the city. Equally distressing was the diet of urban-bred cows. The substitution of distillery slop for a more nutritious feed seemed to hamper the production of milk rich in cream and butterfat. It was impossible, sanitarians argued, to procure wholesome milk from cows fed distillery swill. Consequently, municipal health officials urged boycotts of offensive dairies and used coercion to rid their communities of these noxious establishments.[13]

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[12] See, for example, L.O Howard, "Insects as Carriers and Spreaders of Disease," *U.S.D.A Yearbook* (Washington: Government Printing Office, 1902), pp 177-192, C.G Elliott, "Farm Drainage," *Farmer's Bulletin No. 40* (Washington: G.P.O., 1896), and Theobald Smith, "Sewage Disposal on the Farm," *Farmer's Bulletin No. 43* (Washington: G.P.O., 1896).

[13] Stuart Galishoff, *Safeguarding the Public Health* (Westport, Conn. Greenwood Press, 1975), pp. 82-83,

Improved transportation facilities in the late 19th century promised to remedy the situation. With the proliferation of railroads, most dairies found it profitable to leave cities and move to the country where land values and taxes were lower. In their new rural locations, dairymen further cut expenses and pacified health officials by shunning distillery wastes and permitting their animals to graze on wild grasses. The cheaper mode of production enabled dairymen to expand the size of their herds, furnish greater quantities of milk, and extend their markets. By shipping their product aboard new mechanically refrigerated railroad cars dairymen could supply milk to urban areas throughout the region.[14]

Most dairies, before 1890, had fled cities. By the time of the relocations, however, many health officials began to question whether the removal of dairies to rural settings guaranteed a satisfactory milk supply. Unlike miasmatists, who were principally concerned with the effect of dairy smells on cows and communities, bacteriologically oriented health officials viewed dairies as the chief site of microbial pollution of milk. Noxious odors were of little consequence to these men. What was significant to them was the cleanliness of dairymen and their milking implements.

Surveys of the milking techniques and sanitary habits of rural dairymen confirmed the bacteriologists' worst fears. E. Irving Smith, a member of a suburban Boston board of health, related his observations on the procedures at a typical rural dairy. The dairy routine began, he wrote, when

> . . . some old fellow stumbles out of the house and to the barn, with the stump of a clay pipe in his mouth, and wearing overalls and boots saturated and covered with filth acquired by a winter's use. When he reaches the barn he selects some recumbent cow, kicks her until she stands up, dripping and slimy. . . he does not stop to clean up behind the cow, but sitting down on a stool, proceeds to gather the milk and whatever else may fall into a pail which perhaps is clean and perhaps not. Of such refinements as washing the udder of the cow or wiping her flanks, he has never heard. If he has, it is only to scoff. Then he strains the milk behind the cows. That is bad enough, but it is not the whole story. Everyone knows that in straining the milk the strainer becomes obstructed more or less with dirt and filth, and when the milk does not run fast enough, he would be a rare milker who hesitated to scrap away a place with his fingers so that the milk might run more freely. Those who have seen certain fingers, as I have, know what that means.[15]

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and Cincinnati, "Annual Report of the Department of Health," *Annual Reports of the City Departments of the City of Cincinnati for 1882* (Cincinnati: Commercial-Gazette Job Print, 1883), pp. 732-734

[14] John Duffy, *A History of Public Health in New York City, 1866-1966* (New York: Russell Sage Foundation, 1974), pp. 134-135, and Charles E North, "Milk and its Relation to Public Health," in Mazyck Ravenal, ed., *A Half Century of Public Health* (New York. American Public Health Association, 1921), pp. 237-238.

[15] E. Irving Smith, "Condition of rural dairies," *J Massachusetts Assoc Boards of Health*, 1892, *2*(2)· 33.

Alarmed by similar reports, investigators began to backtrack over milk routes in search of explanations for otherwise inexplicable disease outbreaks. Their efforts often proved fruitful. By 1909, epidemiologists had tied over 250 outbreaks of typhoid, scarlet fever, or diphtheria to contaminated milk supplies.[16]

Diseases brought to communities in milk exposed the fallacy of a totally local disease prevention approach. Without assistance from other communities, milk-borne disease could not be excluded from a specific locality. The situation in New York City exemplified the problem. Receiving its milk from over 35,000 dairies in six states, New York was at the mercy of many small dairy communities. To combat this and other similar situations, health officers emphasized that localities not only had responsibilities to protect the health of their own citizenry but also obligations to other communities as well. The dairy community, Theobald Smith, director of the Pathological Laboratory of the United States Bureau of Animal Industry and Professor of Bacteriology at George Washington University, intoned, has "serious moral responsibilities" to provide cities with disease-free milk. To insure an untainted milk supply, William T. Sedgwick, the guiding light of the Massachusetts State Board of Health, demanded that "the operation of milking should be conducted almost as a surgical operation is, namely, with extreme cleanliness and constant dread of disaster from infection." Ernst J. Lederle, Commissioner of Health for New York City, concurred. Spurred by investigations linking dairies, milk supplies, and disease, Lederle counseled that "milk inspection should be begun at the dairies and stables where bacteria are first found," and warned that "stringent rules must be enforced" for the protection of all localities.[17]

Concern for pure water also helped break down the local orientation of disease prevention. Since John Snow's study of London's Broad Street Pump during the 1854 cholera epidemic, and William Budd's mid-19th-century statistical work on typhoid fever, sanitarians had empirical evidence linking water supplies and disease.[18] However, the results of these and other early studies were easily subsumed within the miasmatic theory. Bolstering this classification were chemical analyses of the total organic matter—the material that produced miasmas—found in rivers and streams. The end product of these analyses indicated that as water flowed, suspended organic material decomposed and seemingly vanished. To explain this phenomena, sanitarians merely appended the theory of the self-purification of running water, which predicted that flowing water purified itself after traveling approximately six miles, as a corollary to the miasmatic theory of disease. Incorporating this "fact" within their disease prevention programs, miasmatists confidently ruled out extralocal water contamination as a factor in community disease causation and concentrated instead on preventing organic wastes, such as garbage and sewage, from being introduced into local waterways until after they passed through their communities. By following this simple procedure, communities could, sanitarians believed, protect themselves from water-borne disease.[19]

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[16] John Trask, "Milk as a Cause of Epidemics of Typhoid Fever, Scarlet Fever, and Diphtheria," *Milk and its Relation to the Public Health, Hygienic Laboratory Bulletin No. 56* (Washington: G.P.O., 1909), p. 25.

[17] Leslie Lumsden, "The Milk Supply of Cities in Relation to the Epidemiology of Typhoid Fever," *Milk and its Relation to the Public Health, Hygienic Laboratory Bulletin No 41* (Washington: G P.O., 1908), p 158; Theobald Smith, M.D , "Some Practical Suggestions for the Suppression and Prevention of Bovine Tuberculosis," *U.S D.A. Yearbook* (Washington: G.P.O., 1895), p. 330; William T. Sedgwick, *Principles of Sanitary Science and the Public Health* (New York: MacMillan, 1902), p 281, Ernst J. Lederle, "Municipal suppression of infection and contagion," *North Amer. Rev* , 1902, *174* 772.

[18] John Snow, *On the Mode of Communication of Cholera*, revised ed., (London, 1855), and William Budd,

The notion of local self-reliance in the prevention of water-borne disease collapsed as microbes became associated with various illnesses. Like their miasmatically indoctrinated predecessors, researchers schooled in bacteriology surveyed waterways to determine the impact of waste disposal on water supplies. Unlike miasmatists, however, bacteriologists measured the concentration and, in some cases, the type of bacteria rather than the total organic content.[20] Not only did investigators find a high proportion of rivers and streams polluted by pathogenic microorganisms, but they also discovered that microbes remained virulent for extended periods. George H. Rohe, Professor of Hygiene at the College of Physicians and Surgeons in Baltimore and author of the classic *Text-book of Hygiene*, summed up their conclusions. "No river," he wrote, "is long enough to purify itself."[21]

As bacteriologists revealed their findings, community concern over water

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Typhoid Fever: Its Nature, Mode of Spreading and Prevention (London, 1873) Budd's book is a compilation of his articles that appeared in the *Lancet* during the 1840s and 1850s.

[19] C F. Chandler, "Report upon the Sanitary Chemistry of Waters, and Suggestions with Regard to the Selection of the Water Supply of Towns and Cities," *Reports and Papers of the American Public Health Association for the Year of 1873* (New York: A.P.H.A , 1875), pp. 541-542

[20] By the 1890s, many states began to measure the bacterial content of their waters. See, for instance, "First Report of an Investigation of the Rivers of Ohio as Sources of Public Water Supplies," *Ohio State Board of Health Thirteenth and Fourteenth Annual Reports* (Columbus, 1899, 1900), passim. Also, the A.P H.A. established, in 1900, a division to pursue bacteriological investigations, including studies of water supplies See "A Bacteriological and Chemical Section of the American Public Health Association," *Boston Med. & Surg J* , 1900, *141*: 581-583.

[21] George H Rohe and Albert Robin, *Text-book of Hygiene*, 4th ed (Philadelphia. Robinson and Co , 1908), p. 52

supplies moved in new directions. Communities, for the first time, realized that water-borne disease often was not caused simply by local sanitary neglect. "Whenever there is typhoid fever in Pittsburgh and other Ohio River towns below the point, the disease is certain to break out in Cincinnati, and correspondingly, when the disease exists in Cincinnati, Louisville suffers," remarked James C. Culbertson, editor of the prestigious *Cincinnati Lancet-Clinic* and former editor of the *Journal of the American Medical Association.*[22] Some communities responded to these disclosures by taking strong action. To protect its citizens from typhoid fever, Missouri, acting on behalf of St. Louis, filed suit in 1900 against Illinois, demanding that the city of Chicago cease dumping its raw sewage into the Illinois River. Commenting on the incident, then not adjudicated in the spring of 1905, Samuel Hopkins Adams, former editor of *McClure's* and a frequent contributor on medical topics in many ten-cent magazines, recognized the broad implications of the suit. "The whole country will profit," Adams stated, "if the principle is established that no city has the right to poison the water supply of its neighbors."[23] As far as water was concerned, George Kober, Professor of Hygiene at Georgetown University and Health Officer, in 1901 saw an analogous situation in Washington, D.C. between individual responsibility to fellow members of a community and community obligations to other communities. "No community," Kober wrote, "has the right to pollute streams used for public water supplies any more than a man has to contaminate his neighbor's well."[24]

Localities with large populations, such as cities and towns, were not the only defilers of water. Communities also needed to be wary of supplies drawn from thinly populated agricultural lands. While farmers, who got their water from wells, believed that polluted waterways did not affect them, epidemiologists since L. H. Taylor's monumental report on the 1885 typhoid epidemic in Plymouth, Pennsylvania had demonstrated that rivers and streams, poisoned by rural inhabitants, struck other communities with dire consequences.[25] A conversation, in 1905, between a New York City health official and a farmer living near the Croton watershed was indicative both of the severity of the problem and of the difficulties that sanitary officers faced. The health official spoke first.

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[22] James C. Culbertson, "Typhoid fever," *Cincinnati Lancet-Clinic,* 1894, *72:* 672.

[23] Samuel Hopkins Adams, "Typhoid: An unnecessary evil," *McClure's Magazine,* 1905, *25* 148 The Supreme Court's ruling affirmed a state's right to sue another state to protect the health of its citizenry. Strictly according to expert testimony, however, the Court found against Missouri, asserting that Chicago's dumping of waste into the Illinois did not materially effect the health of Missourians See Missouri v. Illinois, 200 U.S 496, 50 L. Ed 572 (1905)

[24] George M. Kober, "The progress and tendency of hygiene and sanitary science in the nineteenth century," *Amer. Med.* 1901, *1:* 454.

[25] Lewis H. Taylor, "Report Upon the Epidemic of Typhoid Fever at Plymouth, Pennsylvania," *First*

> "What is usually done with your garbage and refuse?"
> "Oh, it's carted away somewhere."
> "Some of it is dumped into the Branch Brook, isn't it?"
> "I shouldn't be surprised."
> "Then you take no precautions against polluting the drinking water?"
> "Good Lord! You don't suppose we drink that water!"
> "New York has to drink it."
> "Oh, I guess New York is able to take care of itself."[26]

In truth neither New York or any other community could take care of itself. In an era marked by the bacteriological view, no section of America stood alone. Healthfulness seemed to depend not only on the efforts of the locality but on all parts of the nation as well.

The myth of the efficacy of community-oriented disease prevention received yet another jolt with the decline in popularity of summer resorts. In the 1870s and early 1880s vacationers took their leave at fashionable, city-like resorts in rustic settings. At these great summer hotels patrons enjoyed the trappings of high society like those available in cities, and did so in the midst of urban comforts, including indoor plumbing and regular garbage disposal. By the late 19th century, however, many seasonal travellers chose to spend their summers in the untamed country. Once there, they mingled freely with farm folk, sampled their food, worked their fields, and shared their homes. In all these ways summer boarders placed themselves in intimate contact with their hosts.[27]

According to adherents of bacteriology, in addition to a cultural interchange, disease germs, which spread through unsanitary living conditions, impure food, water, milk, or personal contact, were conveyed between boarder and landlord. E. P. Clark, a member, in 1891, of the New Hampshire State Board of Health, noted the deleterious effects of summer boarding on the health of guests and cautioned farmers that they "incur certain obligations to the summer visitor, first among which is his protection against diseases arising from sanitary neglect or oversight." Of course, urbanites

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Annual Report of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania (Harrisburg, 1886), pp. 176-195

[26] Adams, *op cit* (n 23 above), p. 155

[27] E. L. Godkin, "The evolution of the summer resort," *The Nation*, 1883, *37* 47-48, and Clarence Deming, "Changes in summer migration," *The Nation*, 1891, *53*· 210-211

were not blameless in the disease transfer. Often in the country in search of health, some summer migrants brought to their unsuspecting hosts diseases, such as tuberculosis, that primarily were found in urban areas. When summer travelers returned to their homes, the exchange was completed. Having left the diseases of the city behind on the farms, they carried home the ravages of the country.[28]

As a consequence of their growing acquaintance with the bacteriological view, which was bolstered by epidemiological determinations, and the socio-technological transformation of America, many Americans saw disease prevention as a national problem and recognized that intercommunal action and cooperation were necessary facets of any public health campaign. ''The health of the people is not a local problem,'' chided William C. Woodward, Health Officer, in 1908, of the District of Columbia. ''Public supplies,'' such as food, water, and milk, ''are public dangers,'' warned Sedgwick. ''It must not be forgotten,'' he continued, ''that the sanitary chain is no stronger than its weakest part, and that, no matter how clean and wholesome all other conditions may be, if there is one point from which the germs of infectious disease may find admission into the body, danger may be imminent. Nothing is more instructive than to discover cities and towns in which great complaint is made of filth in the streets,—from which, after all, comparatively little danger is likely to come,—while an impure water supply or milk supply is being used with absolute confidence.'' With increasing awareness of the interrelation of all sections of America came the need for all communities to function in concert. ''Disease binds the human race together as with an unbreakable chain,'' argued Cyrus Edson, Sanitary Superintendent, in the early 1890s, of New York City. ''We must, if we would guard the health of the people,'' he added, ''look on them as being one whole, not as being several communities, each complete in itself.'' George M. Gould, editor of *American Medicine*, sounded the same theme. ''Civilization,'' Gould noted, ''means the interdependence of each upon every other, the well-being of the social organism being bound up with that of its units.''[29]

To these men, the nation itself was a large community with each locality assuming an analogous role and acquiring similar responsibilities to that of individuals in their local communities. Paramount in this scheme was the duty of individuals to protect other community members from disease. Both sanitarians and proponents of the germ theory considered this obligation a necessary facet of community life. Unlike sanitarians, however, advocates of the bacteriological view understood that the nation constituted a community in itself and concluded, therefore, that disease prevention must be national in scope.[30]

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[28] E. P Clark, ''Summer boarding and rural health,'' *The Nation*, 1891, *52*· 253-254, and Walter F Chappell, ''Consumption at health resorts,'' *North Amer Rev.*, 1892, *154* 377-380

[29] William C Woodward, ''Health and sanitation in the District of Columbia, with a plea for a National Department of Health, *Amer. Med.*, 1908, *14* 115-116; Sedgwick, *op. cit.* (n. 17 above), pp. 118-119; Cyrus Edson, ''The microbe as a social leveller,'' *North American Review*, 1895, *161* 422 and 425; George M. Gould, ''Responsibility for typhoid,'' *Amer Med* , 1901, *1:* 233

Putting their notion into action, physicians and others attempted to standardize and to integrate the preventive policies and programs of all American communities. Working at the local, state, and federal levels, reformers sought to construct an effective, efficient disease prevention system that blanketed the nation by coordinating the functioning of existing health boards and by crusading for the formation of new public health machinery.[31] On the local level the most pressing need was the creation of sanitary organizations in localities without any disease prevention apparatus. Rural agricultural regions comprised the vast majority of localities that lacked health boards.

Miasmatically trained sanitarians believed that farmers had no impact on the health of any larger society. While they emphasized that it was in the farmers' best interests to follow the sanitary code, sanitarians did little to insure that farmers actually adopted their suggestions. However, with the germ theory either replacing or becoming intertwined with the miasmatic theory, the healthfulness and sanitary habits of farmers were seen to play a major part in the nation's health. Until rural districts were protected and integrated within a nationwide network of local health boards, farmers would continue to spew disease throughout America. Harvey Bashore, a rural Pennsylvania doctor and author of several books on rural health, realized the fallacy of ignoring rural preventive measures and simply concentrating on thickly populated areas. "Modern civilization," he wrote, "with its increased modes of travel, brings the country and the city into the most intimate connection, and isolation is no longer possible. If the city expects to be safe, the whole country must be protected, for danger often lurks beyond the city's borders." Osler echoed the same notion. Effective disease prevention, he reasoned, can be achieved only when all communities, not just cities and towns but thinly settled suburbs and farms, are "systematically organized."[32]

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[30] Two works that deal with the creation of a national community in late 19th century America are Robert H. Wiebe, *The Search for Order, 1877-1920* (New York: Hill and Wang, 1967), and John A. Garraty, *The New Commonwealth, 1877-1890* (New York: Harper and Row, 1968). For the development of federal administration in other fields, see Samuel P. Hays, *Conservation and the Gospel of Efficiency* (Cambridge: Harvard University Press, 1959), and A. Hunter Dupree, *Science in the Federal Government* (Cambridge Belknap Press, 1957).

[31] For an excellent history of local, state, and national health administration, including debates over responsibility, see either Robert D. Leigh, *Federal Health Administration in the United States* (New York: Harper's, 1927) or James A. Tobey, *Public Health Law* (Baltimore: Williams and Wilkins, 1926). Unlike Leigh, Tobey includes numerous cases that outline the legal precedents for public health action.

In addition to the above works, two late 19th and early 20th-century medico-legal studies of public health administration deserve mention. The earlier work, Leroy Parker and Robert H. Worthington, *The Law of Public Health and Safety and the Powers and Duties of Boards of Health* (Albany· Matthew Bender, 1892), deals exclusively with the powers of localities as ceded by the states In it, public health administration is outlined and treated as unique to each locality. The later work, Henry Bixby Hemenway, *Legal Principles of Public Health Administration* (Chicago: T. H Flood and Co , 1914), is concerned with the impact of bacteriological theory on public health law and, with it, the responsibilities of communities and the federal government. As John H. Wigmore, Professor of Law at Northwestern University, stated in the introduction to this study, "it is modern science that has vastly enlarged the scope of modern law. We have found that the scope of the measure necessary for common defence calls for the enlargement of function."

Public health officials and concerned citizens took the initial steps toward construction of a nationwide disease prevention system by petitioning state legislatures to require all rural communities to establish local boards of health. If a state's legislature proved recalcitrant, they took their case to the people. In the late 19th and early 20th centuries, members of state boards of health and medical societies swept across their states, talking with farmers and urging them to organize health boards through township or county governments. Arguing that health boards, which corresponded to county or township lines, would not only protect farmers from disease but also prevent disease outbreaks in other areas, officials impressed upon farmers both their need to abide by sanitary rules and their obligations to the national community.[33]

However, creation of new disease prevention machinery was not limited to unprotected rural regions. Major cities and their suburbs frequently joined together to form regional health districts. Aware "that there should be no political boundary lines in sanitary affairs," and convinced that disease prevention "is a common cause and united action must be obtained," they established "a practical corporation of all health officers of surrounding towns" to ensure consistent regionwide disease prevention programs. The nation's second city, Chicago, enlisted early in the district health drive, joining, in 1907, with towns as far north as Kenosha, Wisconsin, and as far south as Whiting, Indiana, to form the Chicago Suburban Health League. Established "to safeguard the health of Chicago and surrounding territory," the League "acted as a health clearing house," with member towns sharing laboratory facilities, coordinating public health regulations, and pursuing joint epidemiological investigations. Although each of the League members maintained its own health board, they worked together for their mutual benefit.[34]

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[32] Harvey Bashore, "Sanitary Protection of Rural Districts," *Med. Record*, 1902, *62* 413; Osler, *op cit* (n. 1 above), p. 69.

[33] For an example of the action by a state legislature, state board of health, or state medical society, see, respectively, "Report of the Secretary," *8th Annual Report of the State Board of Health of Ohio* (Norwalk, 1894), pp. 8-9, Barbara Rosenkrantz, *Public Health and the State· Changing Views in Massachusetts, 1842-1936* (Cambridge Harvard University Press, 1972), p 126; and "News Notes," *J. Missouri State Med Assoc.*, 1906-1907, *3:* 26-27.

Still, the formation of intercommunal associations and the proliferation of local health boards were not final answers. States needed to expand their disease prevention roles for, as sovereign bodies from which each locality gained specified powers, states retained ultimate responsibility for the health of the people. State health boards, the administrative organs of states charged with protecting the public health, had to be equipped to regulate the newly understood interactions between intrastate communities, to undertake investigations into the etiology and epidemiology of disease, to institute state-wide programs to prevent disease, to insure that disease prevention was carried out consistently and efficiently throughout the states.[35]

By the 1890s most states had formed boards of health and, in the north, the boards began to perform some of the forementioned functions. In many southern and some western states, however, public health funding was so limited that state boards existed in name only. The Arkansas State Board, for example, received such a pittance that it was unable even to rent an office, and its members served without salaries. Working on a part-time voluntary basis, board members could not oversee or supervise the implementation of their disease prevention programs.[36]

To remedy this potentially disastrous situation, men of both local and national prominence publicized the accomplishments of state boards, noted their possible utility, and stressed their place within the framework of a united disease prevention system. Osler was among them. In a speech to the Medical Society of New York, he emphasized that "many of the State Boards of Health need a more efficient organization; all need larger annual appropriations." A state health board must, Osler continued, "form an integral department of each state government, with which civic, county, township, town, and village boards should be in close organic affiliation."[37]

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[34] "Editorial Notes," *Illinois Med J.*, 1908, *13*, 116 and 118. In some eastern states, including New Jersey, New York, and Michigan, the district form was used to coordinate the disease prevention efforts of rural counties.

[35] For an incisive analysis of the public health relationships between states and localities, see John A. Fairlie, "The Centralization of Administration in New York," in The Faculty of Political Science of Columbia University, ed., *Studies in History, Economics, and Public Law*, Vol 9 (New York Columbia University Press, 1898), pp. 540-557.

[36] For increased participation by state boards of health, see Secretary of the State Board of Health of Massachusetts, *State Board of Health of Massachusetts A Brief History of its Organization and its Work, 1869-1912* (Boston, 1912), pp. 23-58, Secretary of the Michigan State Board of Health, *29th Annual Report of the Secretary of the State Board of Health of the State of Michigan* (Lansing, 1902), pp VII-XXXI; and Cowen, *op. cit* , (n. 5 above), pp. 161-162. For the status of southern state health boards, see Mary Boccaccio, "Ground Itch and Dew Poison. The Rockefeller Sanitary Commission, 1909-1914," *J Hist. Med. & All Sci.*, 1972, *27* 36.

The establishment of numerous and increasingly effective state and local health boards went far toward preventing disease and promoting the nation's health. Yet with thousands of localities, forty-five states, three territories, and the District of Columbia independently making and separately pursuing disease prevention policies and programs, prophylaxis of disease in America was still chaotic. "As conditions are at present in this country each state makes its own laws, and, as a consequence, there is no general uniformity," bemoaned Bashore. Nonetheless, Alvah Doty, Health Officer of the Port of New York, saw indications that conditions would soon change. Citing results of epidemiological investigations, which revealed interrelationships between communities, Doty noted that "there is probably no one who has carefully studied the advance made in sanitary science during the past fifteen years who is not convinced that the important and definite knowledge we now possess as to the origin, treatment, and prevention of infectious disease inevitably tends towards a uniformity of action in the enforcement of sanitary rules and regulations throughout the country." U. O. B. Wingate, secretary of the Wisconsin State Board of Health, expressed similar sentiments simply and concisely. Disease prevention, he reasoned, "can only be obtained by a system that will operate uniformly throughout the country."[38]

To insure "harmony of action" throughout the land and to control disease threats that fell outside the jurisdiction of a single state, demands for greater federal involvement in sanitary affairs mounted. "Purity of the natural streams and rivers of the Nation should be preserved through national legislation," announced Culbertson, and President Roosevelt agreed. "Because many of the problems of public health are interstate in their character," he explained, "the aid of the Federal government is necessary to supplement the work of state and local boards of health." Others went further. As early as 1891, the Legislative Council of the American Medical Association called for appointment and inclusion in the cabinet of a Secretary of Public Health.

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[37] Osler, *op cit.* (n. 1 above), p. 69.

[38] Bashore, *op. cit.* (n. 32 above), pp. 413-414, Alvah H Doty, "The Federal Government and the Public Health," *North Amer Rev* , 1898, *166* 546; U. O. B Wingate, "National public health legislation," *North Amer. Rev.*, 1898, *167*· 533.

Representing "the medical consciousness of the Nation," the Secretary, heading a national department of health, would "coordinate, unify, and utilize" the investigations and programs of state boards of health "for the detection and destruction of the germs of deadly diseases that infest the air, waters, and food . . . in every city, town and in the single homes of the agricultural classes." The Committee of One Hundred on National Health, formed at the American Academy for the Advancement of Science meeting in 1906, and counting in its number such notables as Jane Addams, Herman Biggs, Andrew Carnegie, and Booker T. Washington, pursued a similar goal.[39]

The broad-based Committee and the A.M.A. labored not simply for federal participation in, but rather for federal regulation of the national disease prevention effort. Implicit in their conception of a national department of health was the notion that programs initiated at the federal level and carried out under the banner of the federal government were best suited to guarantee uniform, nationwide protection. Moreover, by creating a single federal department in charge of public health policy, they hoped not only to coordinate the actions of state and local health boards but also to centralize the then chaotic efforts of the nascent federal public health bureaucracy.

To enlist public support for a national health department, the Committee sent a questionnaire to leading public health authorities, soliciting their advice for the selection of an issue that would gain the Committee a greater popular backing. The Committee's first query and a partial list of possible responses, indicate their concerns.

> (1) Which of the following conditions affecting public health at the present time presents the most imperative demands for attention from the next Congress, and commands the widest popular approbation in justifying a marked increase in the federal regulation of public health?
> (a) The facts that the Ohio River represents a thousand miles of typhoid fever, and the Hudson River a cloaca maxima from Albany to the sea; the prevalence of deadly infection among millions of our people, arising from the contamination of drinking water, and of ice, and the rapid increase of pollution of our rivers, the boundary lines between States, which only federal authority can control; or
> (b) the facts that out of 80,000,000 of our people, 8,000,000 must perish from tuber-

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[39] James C. Culbertson, "Legislation," *Cincinnati Lancet-Clinic*, 1895, *74:* 421; Letter from Theodore Roosevelt to Irving Fisher, May 8, 1907, housed with the Irving Fisher Papers, Yale University Library, printed in Manfred Waserman, "The quest for a National Department of Health," *Bull Hist Med*, 1975, *49*. 358; Cornelius Comegys, "Report of the Committee on the Question of a Cabinet Appointment of a Secretary of Public Health, *J A.M A* , 1891, *16* 718; Waserman, *op cit.*, 353-380 Waserman provides an informative summary of the movement for a national department of health in the first years of the 20th century.

> culosis . . . which with proper regulation enforced by the federal power can be exterminated . . .; and that the uniform enforcement of national health regulations in all states is absolutely imperative, because infected persons travel from State to State spreading the disease; or
> (c) the facts, that the bubonic plague has gained such a foothold in California that national aid was asked; that . . . should it once gain a foothold in a crowded metropolis, and sporadic cases begin to develop, this disease will cost more in life and effort, than the adequate appropriations for a great national organization of health operating over the period of a generation. Only by extending the national quarantine can other states be protected against laxity in the enforcement of health regulations by a single recalcitrant State; or
> (d) the facts, that the milk-supplies of cities are often drawn from adjoining States over which State control is difficult to maintain; and that infant mortality varies directly with the purity of the milk supply; or . . . .[40]

Clearly, the Committee's notion of the duties and powers of a national department of health came into conflict with the constitutional rights of the States, for, under the Constitution, the States, not the federal government, are the sovereign bodies. Furthermore, the Constitution expressly leaves all powers not specifically delegated to the federal government to the States. Committee supporters knew, as did their A.M.A. counterparts, that their proposals exceeded the traditional limits of federal authority. Yet to these men, the nation's health, which, as revealed by bacteriology and the socio-technological transformation of America, consisted of a whole set of new, mutually interdependent relationships between localities, was too complex as well as too crucial to be left to the whims of individual states. G. C. Comegys, Chairman of the A.M.A.'s Legislative Committee in the early 1890s, asserted that it was the duty of the federal government to maintain and to defend the health of its citizens. "In promoting public health do we not promote the general welfare?" asked Comegys. "What is," he continued, "the first law in political governments? The answer comes down to us through all the ages of civilization; the health of the people is the first law." President Roosevelt sought to modify the states rights doctrine to reflect the new notions circulating in the late 19th century. "It seems to me," Roosevelt theorized, "that such questions as national sovereignty and states rights need to be treated not empirically or academically but from the standpoint of the interests of the people as a whole." Other exponents of a national public health agency were more explicit. "State lines are not respected by epidemic intruders,'' noted M. P. Overholser, a Harrisonville, Missouri physician. ''If it becomes necessary,'' he added, ''to make some changes in our constitution in order to give us federal authority on questions concerning the lives and health of our people, is there any good reason why it should not be done? Submission to the majority rights is a fundamental principle of civil government, and just as individuals and municipalities must be subordinate to the general welfare of a state, so should states rights, as to matters of public health, be subordinate to the rights of the nation.''[41]

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[40] Letter from the Committee of One Hundred to Milton Rosenau, November 1, 1907, housed in the Milton Rosenau Collection at the University of North Carolina, School of Public Health, printed in George Rosen, "The Committee of One Hundred on National Health and the Campaign for a National Department of Health, 1906-1912," *Amer J Public Health*, 1972, *62* 261-262.

The schemes of the Committee of One Hundred and the A.M.A., however, faced strong opposition, and much of it centered on the constitutional issue. Some individuals, including state and local health officials,[42] adamantly rejected massive federal intervention into state and local affairs. Whether because of deep philosophical objections or individual self-interest, these men rallied against the Committee's and the A.M.A.'s proposals and worked through Congress and state legislatures to prevent the creation of a national health department with broad regulatory powers.

Many states righters, nonetheless, recognized the need for some type of federal public health agency. In their view, the federal government should work in close affiliation with, and, whenever possible, through state and local health boards, manage interstate problems, provide detailed information and pursue investigations into the etiology and epidemiology of disease, and, in time of national emergency or at the behest of the states, enter into the internal prevention efforts of the states. Moreover, since disease prevention required diligent, concerted action by all communities, states righters realized that programs, which the federal government cavalierly dictated and controlled without regard to community wishes or advice, would be unsuccessful. ''Without the cooperation of State and municipal health officers,'' Doty acknowledged, ''the administration of public health matters by the national government in any manner would be a dismal failure.'' Rather, states righters asserted, if the federal government joined with state and local health boards, each locality's disease prevention programs would be strengthened and integrated into a cohesive national system. A national health department could, by gathering massive amounts of information and by example, show the way toward proper and efficient disease prevention. When presented with the facts, local and state officials naturally would adopt and apply the suggested measures and, inevitably, disease prevention would become consistent across the land.[43]

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[41] Cornelius Comegys, ''Second Report of the Committee on the Question of a Cabinet Officer of Public Health,'' *J.A.M A.*, 1892, *18:* 801. Both Roosevelt's and Overholser's quotes are from M. P. Overholser, ''The National Public Health Movement,'' *J. Missouri State Med Assoc* 1908-1909, *5* 499-500

[42] Much of the concern generated by the proposed national department of health revolved around its potentially limiting features. Arguing that it would be a ''medical trust,'' many citizens feared that federal law and sanctions would be used to dictate the type of medicine practiced in America See Martin Kaufman, *Homeopathy in America* (Baltimore: Johns Hopkins Press, 1971), pp. 162-163 and Waserman, pp. 373-374

To dramatize their objections, many state and local medical societies broke with the A.M.A. and the Committee and called for a federal department of health with limited regulatory powers. The New York Academy of Medicine made such an appeal. To gather support, the Academy in 1894 sent letters to medical journals across the nation explaining its position. Noting, as did the A.M.A., that disease prevention "is not a local matter, but one that affects every town and hamlet in the United States," the Academy, in contrast to its parent organization, emphasized that "cooperation," not regulation, "by the National Government with state and local health authorities throughout the country would secure uniformity of action and concentration of effort."[44]

Bowing to the mounting cry for a national public health agency, Congress, on August 14, 1912, capped the nationwide disease prevention system by creating the United States Public Health Service. Headed by the Surgeon-General, the U.S.P.H.S. was empowered by charter "to study and investigate the diseases of man and conditions influencing the propagation and spread thereof, including sanitation and sewage and the pollution either directly or indirectly of navigable streams and lakes of the United States, and may from time to time issue information in the form of publications for the use of the public."[45] Assuming leadership of the American public health network along the lines advocated by states righters, the U.S.P.H.S. was the final cog in the institutionalization of the late 19th-century notion of effective disease prevention, a notion based on the interdependence of all of the nation's localities. From an independent, locally oriented approach, which was dictated and restricted by early 19th-century theories of disease, Americans, after 1880, shifted their emphasis and disease prevention efforts to reflect the implications of bacteriology and, with it, the changing concept of community. In effect, the emergence of the bacteriological view, coupled with the socio-technological transformation of America, converted disease prevention from a local to a national problem and Americans adopted a coordinated disease prevention system in hope of securing its resolution.

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[43] Doty, *op cit.* (n. 38 above), p. 548.

[44] Letter to J. C. Culbertson, M.D. from John Girdner, M.D , Corresponding Secretary of the New York Academy of Medicine, April 25, 1894, published in the *Cincinnati Lancet-Clinic*, 1894, *71* 524-525.

[45] U.S., *Statutes at Large*, XXXVII, Part 1, p. 309

DR. VEIT—CHARLATAN OR MARTYR TO OBSTETRICS?*

THOMAS G. BENEDEK

The factors which led to the employment of male physicians or surgeons in the role that traditionally belonged to midwives are difficult to evaluate. In a recent article I reviewed some of the legal aspects of this question and concluded that increasing political concern with the high maternal and infant mortality rates resulted in the enactment of ordinances to govern the training and practice of midwives.[1] Many of these ordinances stipulated circumstances under which the midwife was to obtain the consultation of a "learned physician or surgeon," even though the relevance of his greater learning was questionable. These regulations did not specify when the midwife had to follow the instructions of the consultant and when the latter was actually to perform a delivery or give postnatal care. However, they at least sanctioned the performance of obstetrical services by men in a consultative capacity. When it became permissible for a family to call primarily upon a physician or surgeon in preference to a midwife is more difficult to determine. In the present article I will contrast the available information about two men who acted as obstetricians early in the 16th century and show how the very limited primary data about one of them has been used.

The most recent and romanticized citation about "Dr. Veit"[2] is contained in an article entitled "The origin of the male midwife," published in 1932. According to this author:

> . . . the management of labor was considered women's work, and men in general did not meddle except by invitation. There have been, however, a few courageous souls

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[1] T. G. Benedek. "The changing relationship between midwives and physicians during the Renaissance," *Bull. Hist. Med.*, 1977, *51*. 550-564.

[2] The Dr Veit who is the subject of this article bears no known relationship to either of two distinguished German obstetricians of the same name. (a) Aloys C. G. Veit (1824-1903) was director of obstetrical hospitals in Rostock and later in Bonn. He is eponymically associated with a technic for the extraction of an infant by the feet, the Mauriceau-Smellie-Veit maneuver, which was a modification of a procedure described by Paré (vide infra). W. Haberling, F Heibbotter, H. Vierordt. *Biographisches Lexikon der hervorragenden Arzte aller Zeiten und Volker.* 2nd ed. (Zwickau F Ullmann, 1929), vol. 5, p. 718. (b) Johann Veit (1852-1917) became professor of obstetrics first at the University of Leiden and eventually at the University of Halle I Fischer: *Biographisches Lexikon der hervorragenden Arzte der letzten funfzig Jahre* (Berlin· Urban & Schwarzenberg, 1933), vol 2, pp. 1610-1611.

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> who have struggled against severe criticism and ridicule to obtain a knowledge of the art of midwifery only to have their collected knowledge die with them, or at most be left behind forgotten in musty tomes. Occasionally such a man paid dearly for his desires for obstetrical knowledge. Dr. Viles (sic) of Hamburg, Germany, was publicly branded for having attended a woman in labor, himself disguised as a woman. Another writer says that he was condemned to the flames.[3]

Neither this nor a more succinct citation from 1920[4] was documented. My initial attempts to obtain further information about Dr. Veit came to nought. He is not mentioned in either of the two great German histories of obstetrics, that of von Siebold (1839)[5] or that of Fasbender (1906).[6] With the cooperation of the Hamburg University Library I have collected 13 references to Veit, two from the 16th, one from the 17th, three from the 18th, five from the 19th and two from the 20th centuries. Unfortunately, the two references that were published within half a century of Veit's death are only brief entries in chronologies of the city of Hamburg. That of Tratzinger, from 1557 states:

> This year (1521) there also was burned at the stake one who called himself Doctor Veit. He had from time to time engaged in strange adventures and for some time had passed himself off as a midwife and let himself be employed by women in labor.[7]

The other is anonymous and has been estimated to have been written in the 1530s. The preceding quotation agrees closely with the entry of the earlier author who, however, added that Veit was the son of a priest (therefore being illegitimate) and that another of his illegal activities had been to masquerade as a priest and to say Mass. J. P. Lappenberg, who published this chronicle with annotations in 1861, added two details from the *Exposita civitatis*, the city records. Firstly, the culprit's name was stated there to have been Vitus Volschen. Secondly, in regard to his demise: "The bailiff Hinrich Pennink received 18 shillings for his incarceration for three weeks and eight shillings for his execution."[8] Since the official records designated him as Vitus Volschen and Tratzinger stated that "he called himself Doctor Veit" it may be that he used a corruption of his given name as an alias.

The only attempt at an historical analysis of the reasons for the execution of Veit was published in 1781 in a Hamburg newspaper. This author suggested, based on the absence of the name "Veit" among the old Hamburg families, that he had not been a native of that city. He, furthermore, assumed that Veit had been a physician who had committed certain unspecified crimes and disguised himself as a woman in order to hide from the authorities. He drifted into the practice of midwifery because this was the most natural occupation a man with the knowledge of a physician could follow while in female attire. While Veit, in desperation, might have had such a fantasy, the masquerade had little chance of prolonged success because he would have had to demonstrate the wisdom of a midwife. It was even less likely that he could avoid betraying himself for lack of such wisdom than it was possible for him to convince his patient that he was a woman. The latter was phrased ". . . the physician who would have wanted to be an obstetrician would not have had access in this regard to any honorable woman." Some other passages from this obscure article also deserve quotation:

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[3] W F. Mengert, "The origin of the male midwife," *Ann. Med Hist.*, 1932, *4*: 453-465.

[4] Pachinger, "Die Hebamme," *Arch. f. Gesch. d. Med.*, 1920, *12* 73-78.

[5] Eduard C. J. von Siebold, *Versuch einer Geschichte der Geburtshuelfe* (Berlin: T. C. F. Enslin, 1839), 1845

[6] Heinrich Fasbender, *Geschichte der Geburtshulfe* (Jena G. Fischer, 1906).

[7] Adam Tratziger, *Der alten weitberühmeten stadt Hamburg chronica und jahrbucher. .* (1557) *Tratziger's Chronik*, ed by Johann M. Lappenberg (Hamburg: Lappenberg, 1865), p. 257.

[8] Johann M Lappenberg (editor), *Hamburgische Chroniken in niedersachsischer Sprache* (Hamburg: Perthes, Besser & Manke, 1861), pp. iv, 46-47.

> To avoid a judicial inquiry into his previous activities he fled to Hamburg, and in order not to be discovered put on feminine clothing. Because the false dressing here was successful for a while, either mischievousness or hunger brought him to the idea to become known as a midwife. If this was determined by the latter he perhaps became convinced that among all feminine occupations he would be most likely to succeed in this one because he possessed a related skill . . . .
>
> He was executed not only because of his deceptive clothing, and even less because he assisted women in delivery, but because of his crimes. His disguise was discovered, and he therefore was arrested as a person who had become highly suspicious. He was investigated, his earlier adventures then came to light, he was convicted of sorcery and was condemned to the flames by judicial sentence . . . .[9]

Surprisingly, this author did not cite the priestly imposture as a possible reason for Veit's execution. It is plausible that he may have been discovered because of the failure of his disguise and the accusation of a patient or her spouse. But it is true that this would probably not have accounted for the capital punishment. There was at the time no ordinance as yet in Hamburg to govern the practice of midwifery, and there undoubtedly was no law that pertained to a heretofore unknown act, primary obstetrical assistance by a man. The essayist who wrote in 1781 concluded that Veit had been convicted of sorcery and made the plausible assumption that a sorcery statute existed which resembled the relevant section of the criminal code of Emperor

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[9] J A G., Ein Paar Citata zur Beantwortung der Frage: Ob im Jahr 1522, (eigentlich 1521) ein gewisser Dr. Veit, weil er das Geschaft eines Geburtshelfers getrieben, zu Hamburg verbrannt worden. Hamburgische Address-Comtoir-Nachrichten, 31 Dec. 1781, pp. 809-811.

Charles V, the so-called Carolina, which was promulgated only 11 years later, in 1532. Paragraph #109 of the Carolina stated:

> If someone inflicts injury or loss by sorcery he shall be punished by death and such punishment shall be accomplished by fire. When, however, someone has used sorcery and has not injured anyone thereby he shall be punished otherwise, as is appropriate to the case. The judges shall employ counsel to determine this, as is written subsequently.[10]

Many of the references to Veit contain completely unfounded embellishments. Two writers suggested, without known evidence, that when Veit arrived in Hamburg he had fled from England.[11] Most took for granted that he had been a physician, but one enhanced his standing by referring to "the physician and scientist, Dr. Veit . . . .[12] Several authors agreed at least implicitly with the conclusion that Veit had been executed for having practiced magic, leaving the importance of his practice of midwifery uncertain in this regard. However, one of these speculated that it was his obstetrical skill that was adjudged to have been the evidence of sorcery because it was so superior! According to this author:

> Clever women (i.e., midwives), entrusted with rare healing powers of Nature, and physicians—specifically a Doctor Veit in the year 1521—who pushed farther into the understanding of the human body than tradition and fancy had up to then permitted, were burned alive as witches and magicians in the view of the gawking, half marvelling, half fearful throng![13]

If we assume that Veit had, indeed, attempted to practice midwifery, albeit in disguise, was this unique in the beginning of the 16th century? The practice of licensing midwives began in the latter part of the 15th century to spread among German cities. In many instances a physician—usually a municipally appointed health officer—had at least partial jurisdiction over the approval of midwives. One of the earliest examples of this appears in the midwifery ordinance of Ulm (Bavaria) of 1491.

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[10] Josef Kohler, W. Scheel, *Die peinliche Gerichtsordnung Kaiser Karls V. Constitutio criminalis Carolina* (Halle Waisenhaus, 1900), p. 59.

[11] Hermann G. Gernet, *Mittheilungen aus der alteren Medicinalgeschichte Hamburg's* (Hamburg. W Mauke Söhne, 1869), p. 73; Otto Beneke, *Hamburgische Geschichten und Denkwurdigkeiten*, 3d ed. (Berlin. W. Hertz, 1886), pp. 56-61.

[12] Friedrich Clemens, *Hamburg's Gedenkbuch, eine Chronik seiner Schicksale und Begebenheiten* (Hamburg· B. S. Berendsohn, 1844) p. 249

[13] Georg N Bärmann, *Hamburgische Chronik von Entstehung der Stadt bis auf unsere Tage*, 2nd ed. (Hamburg: F H Nestler, 1822), p 317.

> Every (prospective) midwife before she is admitted and approved as a midwife shall be recognized and questioned about her knowledge and experience by honorable women and, in case of necessity, by sworn physicians. . . .[14]

Statements such as this must not be taken to mean that the physicians were acting as examiners based on their own practical experience. Physicians or surgeons undoubtedly on rare occasions assisted at deliveries, but there is very little documented evidence of this. We do, however, know that Veit's venture into midwifery was not the first recorded instance from that period. It so happened that, about 900 km. south of Hamburg, another man who had practiced obstetrics had been arrested five years before this misfortune befell Veit. We also do not know the reason for his arrest, but aside from this the story of Dr. Zitz (or Seitz) diverged from that of Dr. Veit. The principal distinction was that Zitz was a recognized physician, first known of as a practitioner in Baden, Canton Aargau, near Zurich. The most remarkable aspect of his story was that a group of women petitioned their government for clemency, and even more, that they did this on behalf of a man who had endeared himself to them at least in part by practicing obstetrics. He had moved to the larger city of Freiburg, in the duchy of Wurttemberg, but in 1516 for unknown reasons fell into disfavor with the government. He returned to Baden where he was arrested in October at the request of Freiburg. Excerpts from the ladies' plea explain what happened then, as well as the reasons for their faith in him.

> Gracious dear Sirs!
> We shall recount what happened when the very learned Mr. Alexander Zitz, doctor of medicine from the land of Wurttemberg, who has lived among you for several years and has shown much virtue and has achieved many good deeds of which you know, fell into the disfavor and displeasure of Your Graces . . . . Within half an hour after he had surrendered to Your Grace, Governor, because of the accusation of Your Grace you were called and implored by an honorable young woman who was in a very difficult labor, that this doctor be set free so that he could come to her and help her. And Your Grace, the Governor, also heeded this plea and, because of the great emergency, permitted this. As soon as he came to her, her situation improved. With the aid of God he helped her and with his art he kept her alive. We women who had been with her had been fully convinced that she could not survive. Furthermore, he has in the past helped some less pious women amongst us and with the help of God and his proven skill had kept them alive. But above all we, as members of the female sex, plead with your Graces collectively, and especially with each of you individually, not to judge this doctor hurriedly. . . Because of our modesty and the affliction

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[14] Georg Burckhard, *Die deutschen Hebammenordnungen von ihren ersten Anfangen bis auf die Neuzeit* (Leipzig, W. Engelmann, 1912), p.106.

> which we as women must suffer due to the sin of our Mother Eve,[15] we write to Your Grace to protest that such a useful and talented man be permitted to leave our Confederation (i.e., Switzerland). We think that it would be better to retain him. . . .

The outcome seems to have been a compromise in that Zitz was neither extradited to Freiburg or remained in Baden. Evidence for this is that the cantonal council in Zurich in November considered his request for free passage and evidently granted it. He produced several publications between 1509 and 1533, but none pertained to midwifery.[16]

Although many early midwifery ordinances admonished midwives to consult a physician or surgeon when they encountered difficulties, it is impossible to estimate how frequently this was done or how much obstetrical experience the consultants gained thereby. The only circumstance in which a surgeon was specifically instructed to intervene personally was to perform a post mortem caesarian section. The midwifery ordinance that was in effect in Freiburg while Dr. Zitz practiced there stated in regard to medical consultation:

> In the event that she should have the counsel of the learned physician she should not resist this, but should willingly take steps to prevent that injuries or illness befall either the mothers or children.[17]

Thus, the question of the place of Dr. Zitz in the history of obstetrics is not whether he performed deliveries, but whether he was called primarily, in preference to a midwife.

At the time of the Veit episode several German towns had already enacted ordinances which were intended in varying detail to regulate the selection, training and practice of midwives. In contrast to England, for example, where the ecclesiastic regulation of midwifery long antedated its secular control, the Church in Germany lagged behind the secular authorities in this regard. The first ecclesiastic midwifery regulation was announced in 1528 in Braunschweig.[18] In the very next year an ecclesiastic code of regulations was promulgated in Hamburg, 200 km. to the north. It contained two articles that are of interest in our context. Article 32 was a greatly abridged version of the Braunschweig regulation in which its source even was acknowledged. It contained no technical qualifications and dealt mainly with the obligation of the midwife not to discriminate against poor women.[19]

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[15] That which "we as women must suffer due to the sin of our Mother Eve" is alluded to in the introduction of the first printed book on midwifery to explain the limit this curse places on the potential effectiveness of midwives It was published only three years before the women of Baden made their plea. " . I show in the book and demonstrate in the third chapter that the almighty eternal God gave to our very first mother, Eve, the curse that she shall bear her children in pain because of the transgression of His command, which curse all women have inherited from her Although such (labor) pain can not entirely be dispelled and counteracted with any sort of knowledge, wisdom, or art, still if the pregnant women are provided with intelligent, learned women and midwives and they regularly go to and abide by them before and during labor, such pain may be made milder and lessened " Gustav Klein, *Eucharius Rosslin's "Rosengarten" gedruckt im Jahre 1513* (Munich: C. Kuhn, 1910), p. 6 The full original title and edition were. *Der Swangern frawen und hebammen roszgarten* (Strasbourg: M. Flach, 1515).

[16] C Meyer-Ahrens, "Die Aerzte und das Medicinalwesen der Schweiz im Mittelalter," *Arch path Anat. & Physiol.*, 1862, *24:* 225-250, 465-502. See pp. 487-490.

[17] K. Baas, "Mittelalterliche Hebammenordnungen," *Arch. f. Gesch. d Naturwissenschaft*, 1913, *6:* 1-7.

Article 49 of the Hamburg code was entitled "About the Physicians" and stated:

> The honorable council, in the interest of this good city, shall also employ a well educated physician. All other practicing physicians, itinerant and unqualified practitioners, women or men, shall not be permitted in this city.[20]

This article had two purposes: to formalize the practice which had begun in the 15th century for the city to employ a physician whose role was analogous to that of a public health officer, and to exclude from practicing individuals who were not citizens of Hamburg. While there may have been other regulations which in effect prohibited women from practicing medicine, the implication of this statement is not that female practitioners are automatically disqualified, but that they could practice only if they are citizens. This type of ordinance was not unusual. Nuremberg, for instance, had enacted an ordinance in 1478 to restrict medical practice by non-citizens, the penalty for its infraction being a fine.[21]

Hamburg did not enact a municipal midwifery ordinance until 1718, and most of its clauses resembled provisions of some of the 16th-century ordinances. Its 20th and final section differed from these older ordinances in that it sought to protect the public welfare in the event a shortage of local midwives occurred. Clearly, outsiders were permitted only as an emergency measure, and then only if they met local standards.

> In the event that necessity were to require several midwives to be called here from other towns, either because this town feels a shortage or (other) important reasons would necessitate it, this ordinance shall not be weakened in the least. They must still bring a satisfactory certificate of honorable heritage, of good conduct, and experience in the art.[22]

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[18] Burckhard, op. cit. (n. 15 above), pp. 69-75

[19] *Ibid*, pp. 75-76

[20] Nikolaus H. Julius, *Beitrag zur altesten Geschichte der Hamburgischen Medicinal-Verfassung* (Hamburg: Perthes & Besser, 1826), p. 8.

[21] K. Sudhoff, "Kurpfuscher, Arzte und Stadtbehörden am Ende des 15. Jahrhunderts," *Arch. f Gesch. d Med.*, 1914, *8*: 98-124.

[22] Anonymous, *Sammlung der von E. Hochedlen Rathe der Stadt Hamburg so wol zur Handhabung der*

The hypothesis that Veit masqueraded to hide his extraordinary obstetrical skill can readily be dismissed. However, even though no relevant law existed in Hamburg as yet, he might have had difficulty in becoming a consultant to midwives even if he had been a reputable physician if it was true that he was not a citizen.

The first physician to gain prestige in Hamburg in regard to obstetrics practiced a century after Veit was executed and, as was still commonplace, gained his distinction not from practicing, but from writing about obstetrics. Rodericus a Castro (1546-1627), a Spanish-trained physician of Portuguese birth, had settled in Hamburg in 1594. He wrote a well regarded text (*De universa muliebrium morborum medicina. . .*) in 1604, and an enlarged edition in 1617.[23] According to Fasbender, Castro was unique in advocating that the husband may assist his wife during labor. He should do this by pressing on the uterus during contractions to speed the descent of the infant.[24]

We do not know just when or under what circumstances surgeons began to practice primary midwifery. Ambroise Paré (1510-1590), who among other distinctions was surgeon to four kings of France, may have been the first noteworthy practitioner to do so. His monograph, *De la génération de l'homme,* which was published in 1573, was an obstetrical text for surgeons in which midwives were barely mentioned, even as assistants. Although he did not write in the first person, the tenor of his text strongly suggests that it was based on personal experience. More direct evidence of this is his description of a technical innovation, podalic version.[25]

Another century passed before there is evidence of the introduction of obstetricians into royal households. These practitioners obviously had to gain their obstetrical reputations before they were in this respect brought to the attention of royalty, although some were known because they served the court in other medical capacities. How this experience was acquired is uncertain. It is possible that the employment of obstetricians gained popularity in the 18th century among the upper classes because of the obstetrical services of physicians or surgeons at the courts of France and England begin-

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Gesetze und Verfassungen . vom Anfange des siebenzehnten Jahr-Hunderts bis auf die itzige Zeit . . Der zweyte Theil . 1701-1730 (Hamburg J. E Piscator, 1764), p. 916 The entire ordinance takes up pp 910-916.

[23] Von Siebold, *op. cit.* (n. 5 above), vol. 2, pp. 120-124; Fasbender, *op. cit* (n 6 above), pp. 211-213, Gernet, *op cit.* (n. 11 above), pp 136-138.

[24] Fasbender, *op cit* (n 23), pp. 211-213.

[25] *De la génération de l'homme* was translated into English in. *The Workes of that famous Chirurgion Ambrose Parey,* trans. by Th. Johnson (London: T Cotes and R. Young, 1634). His description of podalic version, i e., extraction of the infant by the feet, appears in Chapter xxvi "Of the chyrurgicall extraction of the childe from the wombe either dead or alive," p. 915.

ning during the last third of the 17th century. The first distinguished patients were two mistresses and a daughter-in-law of Louis XIV of France and the future Queen Anne of England.

At the court of Louis XIV the Duchess Louise de la Vallière (1644-1710) was delivered in 1663 and probably thrice more by a M. Boucher, about whom nothing more is known. The next royal mistress was Françoise de Montespan (1641-1707). She bore seven children to Louis between 1669 and 1678, on each occasion being delivered by Jules Clément (ca.1648-ca.1728). Peculiarly, the medical entourage of Louis XIV did not regularly include a midwife. How Clément came to the attention of the King in this capacity when he was only about 21 years of age is unknown, but he gained an international reputation as an obstetrician. He delivered the Dauphiness in 1686, and thrice journeyed to Madrid to deliver wives of King Philip V of Spain: Queen Maria Luisa in 1713, and Queen Isabella in 1716 and 1720. He was raised to the peerage in 1711. The best evidence that the practice of court obstetricians was not limited to the court was that Clément received this honor contingent upon his agreement to continue to serve the poor free of charge.[26]

Queen Henrietta Maria, the wife of Charles I, was attended by Peter Chamberlen (d. 1631) in 1628. She was suffering an unexpected miscarriage of her first pregnancy, and Chamberlen was not the first attendant to be called. It was recorded that

> . . . she had neither mid-wife nor physician about her, only the poor town mid-wife of Greenwich was sent for who swooned with fear as soon as she was brought into the Queen's chamber so as she was forced presently to be carried out; and Chamberlayne the surgeon was alone that did the part of a mid-wife.[27]

This Peter Chamberlen was the first in a family that included male-midwives in four generations. He had been surgeon to Queen Anne (1574-1619), the wife of James I, but seems not to have served her obstetrically. Peter's grandnephew, Hugh Chamberlen, however, did on occasion serve as a primary obstetrician. He had been a physician to Charles II, and in 1692 he delivered Princess Anne (1665-1714), the future Queen (1702-14) of a son who "immediately dyed."[28] Whether this physician was in attendance rather than a midwife because of the princess's history of miscarriages is unknown.

The trend toward employment of male obstetricians remained slow. The foregoing few events occurred one to two centuries after the experiences of Veit in Hamburg and Zitz in Freiburg and Baden. After nearly another century we find the following comment about the recognition of the advantages of employing male birth assistants, in which Veit is again invoked. This appeared in the article on midwifery in a German encyclopaedia published in 1789. It states:

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[26] G. Bancroft-Livingston, "Louise de la Vallière and the birth of the man-midwife," *J. Obst. & Gyn. Brit. Emp.*, 1956, *63*. 261-267.

[27] James H Aveling, *The Chamberlens and the midwifery forceps* (London Churchill, 1882), pp. 8-9

[28] *Ibid.*, p 151.

> Still in the year 1522 (sic) Dr. Veit was burned in Hamburg because he had let himself be employed as a midwife. This prejudice against masculine birth assistance has by now largely ended. Great princesses in Germany have totally abandoned their folly and have been attended at the birth of future regents by learned obstetricians. A great number of elegant ladies already take refuge even in normal deliveries in the judgement and extensive experience of such men who in this way render their duty and zeal in the best interest of the State and the fatherland. The genuine friend of mankind wishes out of patriotism soon to experience the happy time when the common womenfolk will also have the wisdom in difficult cases to demand the attendance of a prudent and experienced obstetrician. . . .[29]

After 450 years it makes little difference of what indiscretions or crimes Dr. Veit had been guilty. The most interesting aspects of the story are that it has persisted and how it has been modified and used. Of the 13 references to him that are scattered over four centuries only the encyclopaedia article of 1789 and the two 20th-century citations pertain primarily to midwifery.[30] All of the others consider him in the context of the history of Hamburg rather than the history of obstetrics. The most likely explanation of the durability of this tiny fragment of historical information is its ambiguity. It could be used to comment on the punitive system of the time, or on the sexual mores, it could be used to create a martyr or a charlatan. This 14th citation of Veit has attempted to place him into the historical continuum of changing mores which enabled men to replace women as birth assistants. It may also serve as a reminder of the importance of viewing both primary and secondary historical citations within the social context of their authors.

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[29] Johann G. Kruenitz, *Oekonomische Encyclopaedie* (Berlin: J. Pauli, 1728-96). The article "Hebamme" is in Part 22, pp. 526-559, 1789. See pp 530-531

[30] The following three brief references to Veit have not been cited in the text of this article: Wolffgang H. Adelunk, *Historische Beschreibung der Kayserl. Fr Reichs Stadt Hamburg* (Hamburg: C. Neumann, 1696), p. 72. Michael G. Stelzner, *Versuch einer zuverlassigen Nachricht von den Kirchlichen und Politischen Zustanden der Stadt Hamburg* (1731), p. 132. Johann G. Gallois, *Hamburgische Chronik von den ältesten Zeiten bis auf die Jetztzeit*, 2nd ed. (Hamburg. H. Grüning, 1870), vol 2, p.600.

THE OSLER MEDAL ESSAY

HEIGHT, WEIGHT, AND HEALTH:

Anthropometric Study of Human Growth in Nineteenth-Century American Medicine

JAMES ALLEN YOUNG

In 1882, Henry Pickering Bowditch, a professor of physiology at Harvard Medical School, presented a paper entitled "The Relation Between Growth and Disease" to the Section on Children's Diseases of the American Medical Association. He concluded,

> . . . it seems probable that the accurate determination of the normal rate of growth in children will not only throw light upon the nature of diseases to which childhood is subject, but will also guide us in the application of therapeutic measures.[1]

Bowditch's observation, that changes in growth can be the harbinger and reflection of disease, was the culmination of ten years of careful statistical investigation of growth in Boston school children. Though he was certainly not the first medical scientist to note that changes in growth patterns accompany disease, he was the first to measure serially a growing child and determine that decreased weight was oftentimes the first sign of indolent illness. This observation was a crucial theoretical milestone in the history of the study of growth and development, a body of knowledge that has become one of the cornerstones of modern preventive medicine and pediatric practice.[2]

Physicians have long been aware of the correlation of body morphology with predilection for certain kinds of diseases. Hippocrates, for example, discussed the diseases associated with the thin and the obese body habitus.[3]

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[1] Henry P. Bowditch, "The relation between growth and disease," *Transactions of the American Medical Association*, 1881, *3*: 373.

[2] Percy Boulton, an English physician, was probably the first to document arrest in growth coincident with disease in children. See p. 230 below.

For the importance of this observation in modern pediatrics, see V. C. Vaughan, R. J. McKay, and W. E. Nelson, *Nelson Textbook of Pediatrics*, 10th ed. (Philadelphia: W. B. Saunders, 1975), pp. 13-50.

[3] Hippocrates, *Genuine Works*, translated by Francis Adams (New York: William Wood, 1886), pp. 156-83, 195-6; and George H. Lowrey, *Growth and Development of Children*, 6th ed. (Chicago: Year Book Medical Publishers, 1973), p. 5.

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Much later, Shakespeare made an implicit correlation of body type and moral character when he wrote in *Julius Caesar,*

> Yond Cassius has a lean and hungry look;
> He thinks too much; such men are dangerous.

However, in spite of this age-old tendency to assess bodily appearance subjectively, medicine has been surprisingly slow to accept the idea of measuring the human body with scales and meter sticks. Anthropometry, the measurement of man, is a relatively new science.

Although the tools and techniques of weighing and measuring had been available as early as ancient Egyptian and Roman cultures, no known medical writings reported the weight of a newborn infant until 1694, when the French obstetrician Mauriceau reported in his text that the weight of the average newborn was the equivalent of 14 to 15 pounds.[4] This gross error was perpetuated repeatedly in English-language medical texts until 1786, nearly a century later.[5] From a modern standpoint, this strange indifference of the medical profession to scientific measurement remains to some degree an historical enigma. After 1800, however, the American intellectual climate began to change in favor of a more systematic and measurement-oriented study of man.

In the latter half of the nineteenth century, the study of human growth developed dramatically. One exhaustive review numbered the total world publications on general growth at 63 for the period 1800 to 1850, as compared to 647 for the period 1850 to 1900.[6] Americans offered energetic and theoretically fresh contributions to the blossoming science and took world leadership in the area of child growth and development by the early twentieth century.[7]

[4] H. W Chisholm, *On the Science of Weighing and Measuring* (London Macmillan, 1877), pp 130-6. Thomas E Cone, Jr., "De pondere infantum recens natorum: The history of weighing the newborn infant," *Pediatrics*, 1961, *28* 490-8.

[5] Joseph Clarke, "Observations on some causes of the excess mortality of males above that of females," *Philosophical Transactions of the Royal Society of London*, 1786, *76* 357-61

[6] Richard E. Scammon, "The literature on the growth and development of the fetus, infant, and child: A quantitative summary," *Anatomical Record*, 1927, *35*· 241-67 This study was largely restricted to English-language materials, however the choice can be justified on the grounds that English and American workers originated most of the key conceptual steps in growth and developmental study. For a possible explanation, see E. G. Boring, "The influence of evolutionary theory upon American psychological thought," pp. 268-94, in Stow Persons, ed., *Evolutionary Thought in America* (New Haven: Yale University Press, 1950).

For excellent bibliographies of American contributions see Edward M. Hartwell, "A preliminary report on anthropometry in the United States," *Publications of the American Statistical Association*, 1892-3, *3* 554-68, and H. V Meredith, "Physical growth from birth to two years: A review and synthesis of North American research for the period 1850-1941," *University of Iowa Studies on Child Welfare*, Vol. 19, 1943.

[7] For a general history of the field of growth and development, see Lowrey, *op. cit* (n. 3 above), pp. 1-10;

The purpose of this study is to explore the historical roots and the consequences of nineteenth-century American medical interest in anthropometry. The heightened interest in growth in medical science coincided with a period of rapid and striking change in the American environment and social structure, paralleling the rise of the social science movement.[8] Nineteenth-century biology was being revolutionized by the ideas of evolutionary naturalism, and the arrival of the age of scientific medicine in the latter part of the century radically changed the body of medical knowledge and practice.[9] The theories, techniques, and conclusions of Americans who studied growth were deeply influenced by these developments. Indeed, the history of nineteenth-century American ideas on growth of children is a case study in the intimate relationship between changing social attitudes and evolving medical thought and dogma.

Background of American Anthropometry

Three trends were especially important in preparing the ground for the nineteenth-century medical interest in the study of growth: the anthropology and ethnology of the eighteenth-century French naturalists, the science of phrenology, and the techniques of applied statistics and social science. The reaction of the American medical community to each of these three new ways of thinking is reflected in subsequent anthropometrical work.

The eighteenth-century French encyclopedists received an increasing volume of reports, often inaccurate, concerning world-wide racial variation in human morphology and characteristics. Buffon, Raynal, and DePauw, in particular, addressed themselves with enthusiasm to the problem of the New World "savage."[10] Buffon concluded that the "cold and humidity" of the American environment led to the "degeneracy" of all species, plant and animal, in the Americas. This, he felt, was the cause of the cultural inferiority, as well as the reported impotence and limited procreative ability, of the American savage. Raynal extended the theory to include Europeans moving

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and Frederick H Stone, "The measurement of man: An account of the origin and development of anthropometry," *Glasgow Medical Journal,* 1955, *36* 298-309.

[8] For an interesting interpretation of the social history of the late 1800s, see Robert H Wiebe, *The Search for Order, 1877-1930* (New York· Hill and Wang, 1967). Also L. L. Bernard, and Jessie Bernard, *Origins of American Sociology The Social Science Movement in the United States* (New York: Thomas Y Crowell, 1943).

[9] William G. Rothstein, *American Physicians in the Nineteenth Century. From Sects to Science* (Baltimore and London. Johns Hopkins University Press, 1972).

[10] Antonello Gerbi, *The Dispute of the New World. The History of a Polemic, 1750-1900* (Pittsburgh. University of Pittsburgh Press, 1973), pp. 3-52. Henry T. Tuckerman, *America and Her Commentators* (New York: Scribner's, 1864), pp 107-9.

into the new and immature American environment, alleging that even white Anglo-Saxons became decrepit and impotent in the New World. The naturalists offered as evidence ludicrous reports of the inferior size of American wildlife and exaggerated descriptions of the inferior stature and morphology of the Native Americans.[11]

Early American readers of Buffon's *Histoire naturelle,* and others of the encyclopedic publications, reacted briskly to the clearly inaccurate allegations of American inferiority. Thomas Jefferson, in *Notes on Virginia* of 1785, went to great lengths to prove that American plants and animals were equal, even superior, in quality and stature to the European species. He defended the stature, beauty, and culture of the American Indian, and he also attempted to prove that America had produced as many men of outstanding intellect as had Europe.[12] As to the question of inferior stature, an amusing anecdote reflects the American preoccupation with the point.[13] Benjamin Franklin was dining in Paris with a group of American and French scientists, among them Raynal. After Raynal confidently set forth his theories of American inferiority, Franklin suggested that all the men at the table stand and put the matter to a test. One observer, writing to Jefferson, said that all the Americans "were of the finest stature and form," while the Frenchmen were "remarkably diminutive," and Raynal himself a "mere shrimp." Yet another observer stated, ". . . there was not one American present who could not have tost out of the window any one or perhaps two of the rest of the company."[14]

Though the offending French naturalists eventually withdrew their theories, the bothersome theme of American inferiority lingered on in later nineteenth-century European and American literature. For example, Charles Dickens, in his widely circulated *American Notes,* described one area of the American frontier as follows:

> . . . trees were stunted in their growth; the banks were low and flat; the settlement and log cabins fewer in number; their inhabitants more wan and wretched than any we had encountered yet.[15]

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[11] Gerbi, *op cit.* (n 10 above), pp. 45-50.

[12] *Ibid.*, pp. 250-68

[13] Saul K. Padover, *The Complete Jefferson* (New York: Duell, Sloan, and Pearce, 1943), pp. 894-5.

[14] "Letter from William Carmichael, Oct. 15, 1787," in Julian P. Boyd, ed., *The Papers of Thomas Jefferson* (Princeton. Princeton University Press, 1955), Vol. 12, pp. 240-1.

[15] John S. Whitney and Arnold Goldman, Introduction to Charles Dickens, *American Notes for General Circulation* (Baltimore Penguin Books, 1972), p. 34 For another example of the anti-American literature, see Mrs. Francis Trollope, *Domestic Manners of the Americans* (New York· Mead and Co., 1901). For a general contemporary discussion of the polemic, see Tuckerman, *op. cit.* (n. 10 above), pp. 156-293.

It is not surprising that the earliest American scientific anthropometry had as its focus the comparison of size and morphology of different groups and races of adult men.

The science of phrenology, which found its origins in Germany around 1800, was based on the notion that anatomical and physiological characteristics have a direct influence on personality, behavior, and ability. Phrenology held that the mind is composed of a number of independent, measurable faculties, each of which grows with exercise and diminishes with disuse.[16] The new science was rapidly accepted in the United States, as popular phrenologists combed the country. By mid-century, many an American layman became familiar with the notion that capacities could be measured scientifically and deficits corrected with exercise. Amateur scientists collected skulls, and popular magazines reported the cranial dimensions of great men. Anthropologists, led by Samuel G. Morton, began to study race differences in cranial capacity and used their science to explain cultural differences.[17]

The science offered attractive concepts to medicine. By 1837, most of the physicians of Boston and New York subscribed to the principles of phrenology, and medical journals carried numerous articles on the subject.[18] While previously the doctor had reacted to and treated a specific patient complaint, phrenology offered the possibility of scientifically screening for deficits with craniometry and head palpation. It also offered means by which the individual could make the needed compensation for a deficit, applying the doctrine that a particular faculty can be augmented with exercise and diminished with disuse. This theory of compensation through exercise later became an important rationalization for medical involvement in anthropometry and study of child growth.

The third important trend emerging in nineteenth-century thought was the development of the social sciences. Positivist philosophy, exemplified by the popular writings of Auguste Comte, was a central theme in European intellectual history by the early 1800s. For the first time, men began to apply the techniques of the natural sciences to an understanding of society, and philosophers explained social interactions on the basis of "natural laws."[19] Lambert A. J. Quetelet, the famous Belgian social scientist-statistician, emerged from this mold.[20] An astronomer by training, he applied analogies of the laws of mathematics and physics to his study of man and society. He sought to ascertain, through systematic application of measurement and statistics, the qualities of the "average man." Through careful study of the laws of the development of man, he hoped to gain insight into the causes and potential solutions of social problems, particularly crime and infant mortality. His monumental work, *A Treatise on Man and the Development of His Faculties*, of 1835, formed the basis of all subsequent anthropometric work in the century.[21] Among his anthropometrical studies, Quetelet measured height and weight in a small group of children, and he was the first to observe that infant weight temporarily drops immediately after birth. He sought to determine a "law of growth," and attempted to derive formulae relating height to weight in children and adults.[22] Indeed, Quetelet hoped that sufficient understanding of the laws of development and human interactions would eventually allow the social scientist to predict the actions of men.

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[16] John D. Davies, *Phrenology, Fad and Science. A Nineteenth Century American Crusade* (New Haven: Yale University Press, 1955), pp. 3-7.

[17] *Ibid.*, pp. 144-8

[18] *Ibid.*, pp. 135-44.

[19] For history of the development of statistical methodology, see Bernard and Bernard, *op cit.* (n. 8 above), pp. 783-835

Quetelet was acutely aware of the potential application of his anthropometrical techniques in medicine, and he foresaw a role for the physician in prevention of disease.

> A prudent man, who studies and observes his constitution, may prevent many diseases, and scarcely needs to have recourse to professional men, except in severe and extraordinary cases. His habit of observing himself, and the knowledge which he has thus obtained, form, in some measure, a kind of table giving him the elements of his constitution. In general, we only call in the physician when indisposed. I think it would be useful were he also to see us when in a state of health, so that he might obtain a better knowledge of our normal state, and procure elements of comparison necessary for cases of anomaly and indisposition.[23]

As a statistician, Quetelet was very much aware of the concept of individual variation, and he felt that the physician should approach each patient with an individual health record in hand. In his perception of a role for anthropometry in following individual health, he anticipated the direction of growth study in subsequent generations.

Quetelet's anthropometrical work deeply influenced American physicians, particularly in the latter half of the nineteenth century, and his name was said to be "a household word" in some medical circles.[24] Physicians engaged in anthropometry invariably cited his work and compared his studies with their own.[25] The attraction of Quetelet's work lay in its application of techniques of measurement and mathematics to the understanding of social and medical problems, and subsequent nineteenth-century American public health and reform movements were dominated by fact-gathering and statistics.[26]

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[20] Hans Freudenthal, "Quetelet, Lambert A. J." in Charles C. Gillespie, ed., *Dictionary of Scientific Biography* (New York: Charles Scribner's Sons, 1972), Vol. XI, pp. 236-8

[21] Lambert A. J. Quetelet, *Sur l'homme et le développement de ses facultés* (Paris: Bachelier, 1835) See also *A Treatise on Man and the Development of His Faculties*, English translation of the 1842 edition (Gainesville: Scholar's Facsimiles and Reprints, 1969).

[22] *Ibid.*, p. 63.

[23] *Ibid.*, p. 99.

Early American Adult Anthropometry

The earliest American anthropometry was, in the Jeffersonian spirit, directed at defending American stature and manhood against real or imagined attacks from abroad. For example, Dr. Samuel Henry Dickson, of South Carolina Medical College, published a relatively small study of adult height and weight in the *Charleston Medical and Surgical Review* in 1857 and 1858.[27] He compared his statistics to those of Quetelet and concluded, with obvious reference to the theories of the European naturalists, "that our friends on the other side of the Atlantic need be oppressed with no serious anxieties concerning us, nor entertain any strong fear of our degeneracy."[28] The fact that Southern men had not degenerated physically was taken as implicit evidence that their moral and intellectual stature was also intact.

Though a few small studies similar to Dickson's were published before the Civil War, there had been no large-scale, systematic effort to collect anthropometric data. Even the important work of Quetelet was based on diverse studies and small sample sizes. The first large-scale anthropometric study was commissioned by the United States Sanitary Commission to gather statistics on recruits for the Union Army. The Sanitary Commission was founded with President Lincoln's support in 1861, after the disastrous Union defeat at Bull Run, and the endeavor was financed in part by private insurance companies hoping to secure sound actuarial data.[29] The study was directed by Benjamin A. Gould, an actuary, and a variety of medical and demographic statistics were gathered on over one million men. Each recruit was measured and examined in a standardized fashion with respect to a number of parameters, including height, weight, age, geographical and racial background, pulse rate, respiration rate, lung capacity, strength, head circumference, and an elaborate combination of other bodily lengths and angles. In his 1869 report, Gould demonstrated an awareness of the potential application of such large-scale anthropometric efforts for medicine and physiology, noting that "the field for useful research appears almost boundless."[30]

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[24] Henry I. Bowditch, *Public Hygiene in America* (New York: Arno Press and the *New York Times*, 1972), p 33. Also see Donald Fleming, *John William Draper and the Religion of Science* (Philadelphia: University of Pennsylvania Press, 1950), pp. 50-5

[25] See, for example, William T Porter, "The relation between the growth of children and their deviation from the physical type of their sex and age," *Transactions of the Academy of Science of St Louis*, 1893, *6*. 233

[26] Bernard and Bernard, *op cit.* (n. 8 above), pp. 783-835 Also see Robert H. Bremner, *From the Depths The Discovery of Poverty in the United States* (New York: New York University Press, 1956). For the role of statistics in nineteenth-century British social science see Philip Abrams, *The Origins of British Sociology, 1834-1914* (Chicago. University of Chicago Press, 1968), pp 13-30.

[27] Samuel H Dickson, "Statistics of height and weight in the South, *Charleston Medical Journal and Review*, 1857, *12* 607-13, and "Some additional statistics of height and weight," *Charleston Medical Journal and Review*, 1858, *13*: 484-506 See also a later study, "Statistics of height and weight," *American Journal of Medical Sciences*, 1866, *52* 373-80.

[28] Dickson, 1858, *op. cit.* (n. 27 above), p. 506.

In collating and analyzing the voluminous statistics, one of Gould's primary objectives was an understanding of growth. Because the collection of longitudinal growth data from many individuals would have been impractical and time-consuming, Gould introduced a technique that came to be known as the "generalizing method" in the subsequent literature. Using measurements made at one time point on individuals of various ages, he constructed graphic plots of average height versus age and average weight versus age.[31] Gould assumed that these graphs offered a reasonable approximation of the longitudinal growth of the average individual. His height-age and weight-age graphs were the first of their kind in anthropometry and statistics.

The U.S. Sanitary Commission study was influenced by the doctrines of Buffon concerning variation of stature with race and environment. Gould noted that men from some ethnic and racial stocks seemed to be physically superior to those from other backgrounds, and the Civil War statistics were often quoted in contemporary debates in physical anthropology on racial inferiority.[32] Gould also observed that the geographical environment furnishing the recruit had an effect on stature independent to that of the racial background. In particular, army recruits from Western states seemed to have greater stature.[33] Unlike Buffon, however, Gould found no evidence that stature varied with climate and latitude alone.

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[29] John S. Haller, Jr., *Outcasts from Evolution Scientific Attitudes of Racial Inferiority, 1859-1900* (Urbana: University of Illinois Press, 1971), p. 20.

[30] Benjamin A. Gould, *Investigations in the Military and Anthropological Statistics of American Soldiers* (Cambridge. Riverside Press, United States Sanitary Commission, 1869), Preface.

[31] *Ibid.*, pp. 89-92.

[32] Haller *op. cit.* (n. 29 above), pp. 7-28. Also see idem, "Concepts of race inferiority in nineteenth century anthropology," *Journal of the History of Medicine and Allied Sciences*, 1970, *25* 40-51.

Physicians were interested, but ill-equipped in explaining the findings of the U.S. Sanitary Commission statistical analysis. Among the conclusions drawn from the study was the observation that "tall men did not wear as well as the shorter" in wartime conditions. In 1867, Dr. W. S. W. Ruschenberger sought to explain the observation on a medical basis, by postulating that a long trunk offered more space for the internal organs.

> The size of the contained organs is proportional to the capacity of the cavities provided for them; and it may be assumed that, all things being equal, the size of an organ is a measure of its power.[34]

Having gathered his own statistics from the 1866 Naval Academy admissions, Ruschenberger also sought to explain the apparent regional and ethnic variation in growth patterns. He theorized that the "growth impulse is impressed upon the germ at the moment of conception," and that this impulse "is dependent upon the race, age, and vigour of the parents."[35] Thus, some nineteenth-century physicians took note of the anthropometrical statistics of Quetelet and the United States Army; however, there was no effort from within the profession to apply the statistics to problems of health and disease.

The first useful application of anthropometrical statistics was probably made by life insurance companies. Having begun operations in the United States in the 1840s, the companies were forced to be critical in their evaluation of candidates for life insurance. An actuary, T. B. Macaulay, summarized the experience of the companies with a doctor's physical examination as follows:

> The average physician was formerly, and too often is now, satisfied with assuring himself that the applicant is merely free from disease . . . . A man may be entirely free from disease and yet be by no means robust or likely to attain an average longevity.[36]

In the 1870s, the companies began to use age-weight tables, perhaps derived from the Civil War statistics, as a supplementary guideline for estimating longevity. In 1877, actuaries for Mutual Life of New York noted that 80 percent of men applying for insurance and later found to have "consumption" (tuberculosis) were under the average age-adjusted weight at the time of application.

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[33] Gould, *op. cit* (n. 30 above), pp 126-31

[34] W. S. W. Ruschenberger, "Contributions to the statistics of human growth," *American Journal of Medical Sciences*, 1867, *54:* 67-70

[35] *Ibid*, pp. 69-70

[36] T. B. Macaulay, "Weight and longevity," *Publications of the American Statistical Association*, 1890-1, *2* 287-88

> We consider it proved by our tables that a weight below the average is a very suspicious circumstance, as indicating a tendency to consumption, and would advise that all persons presenting such disproportionate figure should be most carefully scrutinized.[37]

Acknowledging the contribution of life insurance businesses, Dr. Moreau Morris presented a paper entitled "Biometry: Its Relation to the Practice of Medicine," to the 1875 meeting of the Section on Practical Medicine of the American Medical Association. He noted that accurate diagnosis and therapy were dependent not only upon the symptoms of the patient, but upon study of individual physical characteristics. Echoing the philosophy of Quetelet, Morris visualized a science of biometry which would not only offer an estimate of vitality and lifespan, but also have value in identifying predisposition to particular diseases. "Thus in applying the laws of biometry we may not only be useful to our fellow man in curing disease, but also as conservators by our forewarning." In his grandiose scheme, the science of biometry, based upon anthropometry and statistics, would lead medicine away from "intuition" and "mysticism."[38] However, Morris offered no specific suggestions, and in spite of his vision, American medicine in 1875 had done little to address seriously the relevance of anthropometrical research in preventive medicine.

Henry P. Bowditch and the Anthropometric Studies of School Children

In the early 1870s, Henry Pickering Bowditch directed the first large-scale anthropometrical study of a population of children. Bowditch was a professor of physiology at Harvard Medical School, best known for his contributions to the fields of neurophysiology and cardiac muscle physiology. He spent three years as a student in Europe with such eminent scientists as Claude Bernard and Carl Ludwig, and he returned schooled in the German practices of laboratory research. Also while in Europe he attended the clinics of Jean Martin Charcot, Paul Broca, and Pierre Louis.[39] Louis was the founder of a school of medical thought based on the "numerical method"; he advocated strict observation and fact-gathering as the foundation of clinical medicine. Bowditch became a convert of this philosophy, and his belief in the value of detailed observation is reflected in a later paper setting forth a standard procedure for recording of data at autopsies.[40] It is also interesting to note that Broca had a strong interest in anthropology and race differences, having invented the concept of the cephalic index in craniometry, but the degree of Broca's influence on Bowditch is not known.[41]

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[37] *Ibid.*, p. 293. For another interesting discussion of longevity theory, see Nathan Allen, "The law of longevity," *The Sanitarian*, 1874, *1* 491-5.

[38] Moreau Morris, "Biometry: Its relation to the practice of medicine," *Medical Record*, 1875, *10* 481-8

[39] Howard A. Kelly and Walter L. Burrage, *American Medical Biographies*, pp. 130-2 (Baltimore: Norman,

One cannot be certain why Bowditch, a noted cardiophysiologist, became interested in studying the growth of children; however, his background was steeped in scientific research and a public-spirited family tradition. He was from a noted Boston family with considerable interest in science, and his uncle, Henry Ingersoll Bowditch, preceded him at Harvard as a great professor of medicine. His uncle was, in addition, one of the founders of the Massachusetts State Board of Health, the first in America, in 1869, and he later became one of the early proselytizers for the concept of state-supported preventive medicine efforts.[42] The fact that the younger Bowditch's study of growth was one of the first undertaken by the new Massachusetts State Board of Health indicates that he shared his uncle's interest in preventive medicine.

Paradoxically, Bowditch probably initially viewed his anthropometrical study as largely anthropology and social science, only to perceive fully at a later date its relevance for medicine and public health. At meetings of the Boston Social Science Association in the late 1860s, there was considerable discussion of the observation that long-established New England families tended to have fewer children than first generation immigrant American families.[43] Dr. Nathan Allen, of Amherst College, was convinced that this phenomenon of decreasing birth rate was due to the inferior health and

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Remington, 1920); John H Talbott, *A Biographical History of Medicine* (New York Grune and Stratton, 1970), pp 944-7, W. B. Cannon, "Biographical Memoir of Henry Pickering Bowditch: 1840-1911," *Memoirs of the National Academy of Science*, 1927, *17* 183-96.

[40] Henry P. Bowditch and F. A Harris, "On the collection of data at autopsies," *Boston Medical and Surgical Journal*, 1882, *107* 365-6

[41] Haller, *op. cit.* (n. 29 above), p. 11, and Edwin Clarke, "Pierre Paul Broca," in Gillespie, ed., *Dict Sci. Biog* Vol. II, pp 477-8

[42] H. I. Bowditch, *op. cit.* (n 24 above), pp. 1-38 See also Barbara G. Rosenkrantz, "Cart before horse. Theory, practice, and professional image in American public health, 1870-1920," *Journal of the History of Medicine and the Allied Sciences*, 1974, *29* 61.

[43] Nathan Allen, *The Law of Human Increase* (New York· Moorhead, Simpson, and Bond, 1868).

physique of Americans, and in particular the poorly-balanced development of American women.

> The evidences of the general ill health of our New England women, as gathered from travelers, miscellaneous writers, newspapers, journals, medical works, and physicians, are so abundant that they have nowhere been called in question.[44]

Allen believed that the national strength and cultural well-being of a population was directly related to the stamina and degree of physical development of its people.

Interestingly, Bowditch's study began around 1870, through the Boston Social Science Association, with height and weight measurements of a small group of Boston school children.[45] Bowditch's first thoughts regarding the potential application of his growth study are reflected in a March 19, 1875, letter to Edward Jarvis.

> My object in trying to ascertain the heights and weights of the school children is to determine if possible whether the rate of growth is the same in this country as abroad. I have some reason to believe that about the period of puberty girls grow faster in this country than in Belgium (according to Quetelet). If this be so it may be of interest as tending to throw some light on the causes of the alleged inferiority in physique of the American women.[46]

Clearly, Bowditch was initially influenced and motivated by contemporary concern over the physique, health, and reproductive capacity of established Americans, particularly American women.

The earliest published report of the results of Bowditch's preliminary study appeared in a brief account of an 1872 meeting of the Boston Society of Medical Sciences.[47] This review noted that Bowditch had been the first to prove that girls surpass boys in weight and stature at puberty. He further demonstrated that girls very nearly complete their growth by age 15 and that boys overtake them, continuing to grow until about 19 years of age. By 1876, ". . . in view of . . . the direct bearing of the question on the sanitary conditions of the people," Bowditch had decided to continue his work in expanded form under the auspices of the Massachusetts State Board of Health. Like Quetelet and Gould, Bowditch was interested in the effect of environmental conditions and racial background upon the phenomenon of growth, and his study was designed primarily to address those questions. Using Benjamin Gould's "generalizing method," Bowditch assumed in his study,

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[44] *Ibid.*, p. 14. Allen reiterated his theme in the 1874 Annual Discourse Before the Massachusetts Medical Society, an organization to which Bowditch belonged, *Medical Problems of the Day* (Boston: A. Williams, 1874).

[45] Henry P. Bowditch, "The growth of children" *Annual Report of the State Board of Health of Massachusetts*, 1877, *8*. 3.

[46] Henry P. Bowditch, Letter to Edward Jarvis, March 19, 1875, Edward Jarvis Papers, Countway Library, Boston, Mass. Bowditch's interest in the physique of American women extended until at least 1890, when he did a study confined to women. "The physique of women in Massachusetts," *Annual Report of the State Board of Health of Massachusetts*, 1890, *21* 287-304

[47] "Comparative rate of growth in the two sexes," *Boston Medical and Surgical Journal*, 1872, *87*· 434-5

> . . . the rate of growth of children may be ascertained by computing at any one time the average height and weight of children of different ages, as well as by determining the average height and weight of a given set of children in successive years.[48]

Bowditch distributed forms to Boston schools requesting data on the pupils, including age, height, weight, birthplace, and nationality and occupation of the parents. Having gathered data on thousands of children, he was able to compare the growth of children of different racial and socioeconomic backgrounds with extensive use of age-height and age-weight tables and graphs. Bowditch also incorporated data from Quetelet and others, in order to compare American growth with that of European children.[49]

The principal conclusions of the final study, published in 1877, were as follows:

(1) In Boston, children of American-born parents were taller and heavier than children of foreign-born parentage. The superiority, Bowditch concluded, was due both to difference in race and stock, and to "the greater average comfort in which such children live and grow up."

(2) Pupils of American parentage attending private schools were, for similar reasons, superior in height and weight to the average pupil in the public schools.

(3) Pupils of American parentage attending private schools were taller and heavier than English boys of the non-laboring class and attending public schools and universities.[50]

The reaction of professional societies and the popular press to the study was prompt and widespread. For example, a *Boston Daily Globe* editorial writer examined with concern the population data of Nathan Allen, but found relief in Bowditch's work.

> There is certainly encouragement in knowing that population is not the sole test of the condition of a people, and while a decline in their birth rate, according to parentage, may appear to show that the foreign born element is unduly in the ascendant other observations tend to vary with this conclusion.[51]

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[48] H. P. Bowditch, 1877, *op. cit.* (n 45 above), p. 8.

[49] *Ibid*, pp. 12-19.

[50] *Ibid*, pp. 31-2.

[51] "Are Americans running down?" *The Boston Daily Globe*, June 14, 1877. See also, "The growth of

This reaction, and others like it, betrays lingering doubt concerning the ability of Americans to gain control over a rapidly-changing social environment. There is strong evidence that Bowditch's initial motivation in studying the growth of children was, to a large degree, a product of similar concerns.

Quetelet and Gould had previously set forth the idea that growth varied with race and nationality; however, the notion that social conditions and the degree of "average comfort" affect growth patterns was new and important to American public health. The effect had been documented much earlier in England by J. W. Cowell, a government factory inspector. In 1832, he presented anthropometric evidence for the inferior stature of laboring children as compared to non-laboring school children.[52] In the same hearing, numerous physicians and surgeons testified that factory conditions "stunted growth."[53] Bowditch quoted the Cowell study of factory children and compared the statistics with his own.[54] Thus, Cowell's work may have been a major inspiration for Bowditch's interest in variation of growth with parental occupation and background. The awareness of a relationship between living conditions and growth was no doubt a factor in taking the Bowditch study out of the realm of anthropology and social science and into that of public health and preventive medicine.

In the conclusion of the 1877 report, Bowditch predicted that,

> . . . a systematic comparative study of the physique of the growing population in different localities will throw light upon the relative sanitary conditions there prevailing.

Speculating as to the possible relation between disease states and the rate of growth, he further suggested,

> . . . it would be interesting to inquire whether, in the rapid growth which is said to follow certain diseases, especially fevers, the height and weight increase in their normal ratio; whether this accelerated growth *after* the disease is simply a compensation for a retardation *during* the disease; whether abnormally rapid growth causes a predisposition to disease; and whether any connection can be traced between the rate

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children," *Boston Journal*, Aug. 17, 1877, and "Boston boys and girls," *The Daily Graphic*, New York, July 2, 1877

[52] John W Cowell, "Report of the Commission on Employment of Children in Factories," *Sessional Reports of the House of Lords*, Parliament of Great Britain, Vol. 317, Section D. 1 , pp. 87-8, 1833. See also *The Penny Magazine*, London, No. 339, July 15, 1837, pp. 270-2

[53] *Sessional Reports of the House of Lords*, Parliament of Great Britain, Vol. 321, pp. 465-6, 518, 540, 558, 1833

[54] H. P. Bowditch, 1877, *op cit.* (n. 45 above), pp. 14-17.

of growth and the frequency with which certain diseases of growing children (e.g., chorea) occur at different ages.[55]

Though the concluding statement left Bowditch tantalizingly close to the idea of comparing individual growth to the standard, as the insurance companies were doing, he was primarily interested in the comparison of groups. While Bowditch was aware that "the growth of any one individual is far from being as regular as that indicated by the table of averages," his study emphasized pooled data, or the "mean child." Like Quetelet and Gould before him, he attempted to find mathematical formulae to approximate a "law of growth."[56] Though Bowditch, in his 1877 study, reintroduced the concept that social conditions modified growth, he was deeply affected by the social scientists who had preceded him in anthropometry. His work was primarily oriented, as of 1877, toward discerning laws and comparing populations.

Contemporary English anthropometrists, working with a slightly different orientation and bias, were quite influential in turning Bowditch toward the next logical step: study of the individual compared to the normal standard. Charles Roberts, an English surgeon and reformer, corresponded closely with Bowditch and undertook parallel anthropometric measurements of thousands of London children.[57] Roberts' work was motivated by a new English law which set a minimum age for child labor eligibility and required a surgeon's examination to certify the age of a prospective child laborer. Because he found himself unable to assess accurately the age of a child, due to the wide variability in physical characteristics at a given age, he formulated standard age-height and age-weight tables.[58] Unlike Bowditch, Roberts took note of the variation of the individual with respect to the standard, and his display of data, as compared to that of Bowditch, reflects the different emphases of the two men. Instead of simply noting a single mean point in his age-height or age-weight graphs, Roberts presented the entire distribution at each point, thereby allowing the reader, at a glance, to ascertain the degree of variability at that particular point.[59] While Bowditch compared groups, Roberts, at least in part because of the practical reasons motivating his work, placed his emphasis on individual variation.

Both Bowditch and Roberts were influenced by Sir Francis Galton, an

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[55] *Ibid.*, p 37.

[56] *Ibid.*, Appendix.

[57] Charles Roberts, "The physical development and the proportions of the human body," *St George's Hospital Reports*, 1876, *8*· 1-48. Idem, *A Manual of Anthropometry* (London· J and A. Churchill, 1878).

[58] Charles Roberts, "The physical requirements of factory children," *Journal of the Royal Statistical Society*, 1876, *39* 681-90.

[59] Charles Roberts, "The physical development and the proportions . . ," *op. cit*, (n. 57 above) pp 22-3.

English gentleman-scientist with a consuming interest in anthropology and statistics.[60] In contrast to Quetelet, who wanted to define the average man, Galton sought an understanding of the laws governing variation in human faculties from generation to generation, and he devoted a career to anthropometric measurement and statistical analysis of variation. Galton was introduced to Bowditch by Roberts, and he corresponded with the Boston physician throughout the 1870s. In one case Galton made the following suggestion as to the means of presentation of Bowditch's data:

> I trust you will exclude no cases, however exceptional, and that you will not trim your results to the Procrustian bed of the "Law of Error" by only giving for the final results the mean and the assumed probable error—but that you will give a fair number of ordinates, sufficient to enable the curve to be constructed and intermediate values to be found by interpolation.[61]

Galton was referring to the common practice of many contemporaries of casting out statistics very much at variance with what they perceived as "normal."[62] Like Roberts, Galton appreciated the importance of the distribution of variation around each mean point, and he urged Bowditch to display his data graphically.

Percy Boulton, physician to the Samaritan Hospital for Women and Children in London, was the first physician to follow the height and weight of a group of children *longitudinally* and construct normal tables from that data.[63] Because of time constraints, serial measurement was neglected by Gould and Bowditch in favor of the "generalizing method." As early as 1876, the novel longitudinal approach led Boulton to the realization that slowing of individual growth often reflected ill health.

> Arrest of development, whether in latitude or longitude, is an early sign of disease, and is as demonstrable by the weighing machine as anything shown by the ther-

[60] Norman T. Gridgeman, "Galton, Francis," in Gillespie, ed., *Dict. Sci. Biog.*, Vol. V, pp. 265-6, and Francis Galton, *Hereditary Genius: An Inquiry Into Its Laws and Consequences* (London: Macmillan, 1914). Galton later undertook extensive anthropometric study of his own: F. Galton, *et al.*, "Final Report of the Anthropometric Committee," *Reports of the British Association for the Advancement of Science* 1883, pp. 253-306, and F. Galton, "On the Anthropometric Laboratory at the late International Health Exhibition," *Journal of the Anthropological Institute of Great Britain and Ireland*, 1885, *14*: 205-21.

[61] Galton to Bowditch, June 26, 1876, quoted in Helen Walker, *Studies in the History of Statistical Method* (Baltimore: Williams and Wilkins, 1929), p. 101. Some of the Galton-Bowditch communication is found in the Francis Galton Papers, letters 172/13A and 158/1A, University College London Library.

[62] See, for example, Stanford E. Chaille, "Infants, their chronological progress," *New Orleans Medical and Surgical Journal*, 1886-7 n.s., *14*: 895; and Percy Boulton, "On the physical development of children," *Lancet*, Oct. 16, 1880, p. 611.

[63] Buffon, in an edition of *Histoire naturelle*, published the first known recording of serial weight of a child. Richard E. Scammon, "The first seriatum study of human growth," *American Journal of Physical Anthropology*, 1927, *10*: 329-36.

> mometer, which is an equally homely instrument only of late years used in clinical research.[64]

In 1880, he noted that "... Quetelet, Bowditch, Galton, and Roberts all treat the subject from the anthropological point of view, treating man as he is in the mass." Boulton became interested in the growth of the individual child and concluded that the previous generalizing method studies were inaccurate approximations of the normal waxing and waning of individual growth. He further observed,

> Arrest of growth, or loss of weight, precedes so many diseases that it may be looked upon as a danger signal, and if the "caution" is noticed before the disease point is reached catastrophe may frequently be prevented. It is thus that it becomes of such value in preventive medicine.[65]

Boulton used the example of "pulmonary consumption," citing evidence that weight loss nearly always precedes cough as a symptom. The weight loss, he warned, was insidious and apt to go unnoticed for some time. He concluded his report with a plea for systematic practice of weighing and measuring, particularly in the course of medical inspection of schools.[66]

Though Bowditch, in his original study, had speculated about the *potential* usefulness of comparing an individual to the standard of mean, he had not addressed the significance of following an individual's growth serially. As Boulton himself noted, he had been too "anthropological" in his orientation. By 1882, Bowditch had experimented with Boulton's approach, and he quoted him in the important American Medical Association presentation cited at the beginning of this paper. In that presentation, Bowditch displayed eight months of weekly weight statistics for a two-year-old child and demonstrated that weight loss preceded the development of an illness characterized by "enlarged cervical glands and clay-colored dejections." He noted similar losses of weight preceding a bout with measles and a "cold in the head."[67] Bowditch felt the "caution signal" afforded by serial weighing would be more useful in cases of chronic than of acute illness; however, he felt it possible that the warning might be of occasional use even in the latter case. Bowditch urged his colleagues to begin weekly weighing of young patients, citing the need for further research to determine normal growth patterns. He added,

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[64] Percy Boulton, "Some anthropometrical observations," *British Medical Journal*, March 4, 1876, pp. 280-2.

[65] Boulton, 1880, *op. cit.* (n. above), p. 375.

[66] *Ibid* , p. 376 Though Boulton's recommendation of regular weighing was one of the first in the medical literature, at least one lay publication urged mothers to keep longitudinal growth records: J. B. Fonssagrives, *The Mother's Register Current Notes of the Health of Children* (New York. G. P. Putnam, 1873).

[67] H. P Bowditch, 1881, *op cit.* (n. 1 above), pp 375-6.

> When the work of weekly weighing is once systematically undertaken, the actual time required is found to be very short, while the record thus obtained cannot fail to furnish important information in regard to the child's constitution, and to afford valuable indications for the guidance of the family physician.[68]

Applications of Anthropometry in Behalf of the Child

There are several reasons why children suddenly became the focus of extensive anthropometric study both in America and abroad in the 1870s. While armies and military academies had been studied previously, the mushrooming growth of public schools offered large, accessible, and relatively homogeneous populations of children for study. Another important reason, however, lay in the changing role of the child in nineteenth-century America and the changing social perception of the importance of the child. Children were increasingly visible in the community, and with the coming of industrialization, the shameful treatment of the child laborer became a major concern of a new social reform movement.[69] The issues involved attracted extensive public attention, and the Society for the Prevention of Cruelty to Children was founded in 1874, ten years after the founding of the Society for the Prevention of Cruelty to Animals.[70] Many such organizations, government and private, directed nationwide efforts at protecting the child, giving him a free public education, and thereby protecting the future of the nation.

The growth of medical interest in the child paralleled the gradual social recognition of the child as a unique resource with special needs. Medical care of infants and children, formerly the folklore-dominated province of obstetricians, midwives, and mothers, was the subject of an expanding medical literature in the last half of the century. The first hospitals devoted exclusively to the care of the infant were founded in the 1870s, and the specialty of pediatrics gradually emerged.[71] The medical profession, which had been grossly ignorant of the birthweight of a newborn less than a century earlier, began to awaken to the needs of the child.

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[68] *Ibid.*, p 377.

[69] See Robert H Bremner, ed., *Children and Youth in America A Documentary History* (Cambridge: Harvard University Press, 1970), Vol II, pp. 81-114, 601-55, and Priscilla Robertson, "Home as a nest. Middle class childhood in nineteenth century Europe," in Lloyd deMause, ed., *The History of Childhood* (New York The Psychohistory Press, 1974).

[70] George H. Payne, *The Child In Human Progress* (New York: The Knickerbocker Press, 1916), p. 332.

[71] Francis R. Packard, *History of Medicine in the United States* (New York: Paul B. Hoeber, 1931), Vol. 2, pp. 1178-86.

The study of growth was just a part of a larger conversion within professional medicine to the use of fact-gathering and statistics in the 1870s and 1880s. John Shaw Billings' difficult campaign leading to the passage of vital statistics laws, coupled with the first reasonably accurate United States census in 1890, made available much more epidemiological data.[72] As a result, in the last quarter of the century, accurate estimates of infant mortality were widely publicized. The realization that as many as 200 neonatal deaths occurred for 1,000 live births further spurred professional and public interest in matters related to child health.[73]

Bowditch's work came in this context of heightened interest in child health, and it is not surprising that other American physicians began to seize upon his example and study the characteristics of normal growth and development. Dr. Charles Minot of Boston published a review of studies of growth in the *Boston Medical and Surgical Journal,* asserting that the Bowditch studies had ". . . excited a very widespread and general interest in the matter."[74] Dr. George Peckham studied growth of Milwaukee school children under the auspices of the Wisconsin State Board of Health, using a study format nearly identical to that used by Bowditch.[75] Almost simultaneously with Bowditch's realization of the value of longitudinal observation of growth, Etienne Evetsky, a New York physician, came to virtually the same conclusion while studying infant nutrition in 1881. In addition, he filled a gap left in the Bowditch study with a careful study of infant growth. Evetsky correlated the dentition periods with depressed rate of growth, increased susceptibility to infection, dietary problems, and increased mortality.[76]

In the decade that followed, several other physicians offered statistical or theoretical studies of growth in infancy.[77] The most notable was that of Stanford Chaille, of Tulane University, who asserted in 1886 that child development was ". . . a mere recapitulation of man's ancestral progress upwards from his primitive savage condition."[78] Chaille presented a careful account of the progress of the normal infant, drawing upon anatomical, physiological, and psychological observations. Included in the description one can find many of the developmental landmarks used in twentieth-century pediatric developmental screening tests. Chaille fell short of recommending actual screening based on his developmental observations, but he suggested that ". . . parents should, throughout the first year, weigh their babies and record the result *every week,* as is now habitually done in the best hospitals and asylums for infants."[79] Other than the aforementioned sporadic publication of hospital-based growth statistics, this 1887 statement is the earliest evidence that the more progressive hospitals of the time were beginning to make a routine practice of weighing infants and children.

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[72] John Shaw Billings, "The registration of vital statistics," in Gert H. Brieger, ed., *Medical America in the Nineteenth Century Readings from the Literature* (Baltimore: Johns Hopkins Press, 1972), p. 306.

[73] Bremner, 1970, *op. cit.* (n. 69 above), Vol. II, pp. 958-83.

[74] Charles S. Minot, "Human growth," *Boston Medical and Surgical Journal,* 1880, *103.* 79-82.

[75] George W. Peckham, "The growth of children," *Publications of the State Board of Health of Wisconsin,*" 1882, *6.* 28-73.

[76] Etienne Evetsky, "On the growth of children during the first year, and on the nutritive conditions of early childhood," *New York Medical Journal,* 1881, *33·* 172-89.

[77] For example, Willard H. Morse, "The baby's growth," *Virginia Medical Monthly,* 1886-87, *13:* 392-5, and John Stockton-Hough, "Statistics relating to 700 births (white) occurring in the Philadelphia Hospital (Blockley) between 1865 and 1872," *Philadelphia Medical Times,* 1885, *16* 92-4

[78] Chaille, *op. cit.* (n. 62 above), p. 894.

Though there was growing enthusiasm about the role of growth records in preventive medicine, Bowditch, Boulton, and other early proponents of the technique did not have a clear view of how growth abnormalities would be treated by the physician. They had only an implicit faith that the standard therapies of medicine could treat the underlying diseases if applied in time. Many nineteenth-century biologists, however, believed that deficits in a particular aspect of one's development could be corrected with exercise. This belief had been a fundamental tenet of American phrenology. Given the fact that abnormal growth was associated with disease, many theorized that disease could be avoided altogether via "harmonious development of the human body." This notion, in one form or another, was ubiquitous in the writings of physician-anthropometrists. Dr. Willard Morse, for example, stated that proper infant development depended upon "the vigorous exercise of all the organs, and of the nervous system in particular."[80] The clear implication was that imbalance in development led to states of ill health.

Beginning in the 1830s, physicians campaigned actively to rescue the American child from excessive "mental strain" in the schools.[81] Excessive exercise of the mind, it was felt, drained vital energy from physical development. Bowditch himself recommended, on the basis of his finding that girls precede boys in their growth spurt, that girls have a different school schedule than boys.

> . . . it seems to be almost self-evident that at those periods when the forces of the organism are engaged in producing rapid growth and development of the physique, the requirements in the way of mental effort should be reduced.[82]

[79] *Ibid.*, p. 910.

[80] Morse, *op. cit* (n. 77 above), p. 392

[81] John Duffy, "Mental strain and overpressure in the schools: A nineteenth century viewpoint," *Journal of the History of Medicine and Allied Sciences*, 1969, *23:* 63-79

[82] H. P. Bowditch, 1877, *op cit.* (n. 45 above), pp. 18-19.

The same theme is repeatedly encountered in other early child anthropometry literature.

Nineteenth-century popular health movements stressed the inferior American bodily constitution and blamed unhygienic environmental conditions.[83] Robert Tomes expressed the fears of many Americans when he launched a tirade on the weakening, fast-paced, nervous, and unhealthy aspects of the rapidly-changing American environment. In an article entitled "How We Get Sick," he wrote,

> Look at our young men of fortune. Were there ever such weaklings? an apathetic-brained, a pale pasty-faced, narrow-chested, spindle-shanked, dwarfed race—mere walking manikins to advertise the last cut of the fashionable tailor . . . Dissipation, of course, degrading and enfeebling everywhere, is more corrupting and destructive here than in any other country.[84]

The solution, he felt, lay in countering corrupting influences with exercise and a more natural, harmonious development of the faculties.

The principle that physical deficits could be corrected by exercise gained an organized constituency in 1885, with the founding of the American Association for the Advancement of Physical Education. The general philosophy of the group was to promote the aims of physical education and gymnastics, with an eye toward upgrading the development of American youth. Though the honorary membership roll of 1895 included the names of Bowditch, Galton, and Roberts, there is no evidence that these early students of human growth were more than minor participants.[85] Other members, however, foresaw a crucial role for anthropometric screening in preventive medicine, and some chose to extend the concept to great lengths. Dr. A. M. Starkloff echoed the century-old theme of the inferiority of the American physique and health.

> The American race is specifically a new product. It represents a union of different races and nationalities. It also represents the modifications of climate, as well as those which result from social conditions and our exacting business life. The American race, already traceable in the first generation of parents born in this country, is distinguished by a rather spare, tall bodily figure, particularly by an inadequate and scanty development of the thorax and the pelvis.[86]

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[83] Richard H. Shryock, *Medicine in America Historical Essays* (Baltimore: Johns Hopkins Press, 1966), pp. 111-20; and Allen F. Davis, *Spearheads for Reform* (New York: Oxford University Press, 1967)

[84] Robert Tomes, "How we get sick," in Brieger, *op cit.* (n 72 above), pp. 256-64.

[85] American Association for the Advancement of Physical Education, "List of Members," *Proceedings of the American Association for the Advancement of Physical Education*, 1895, *10* 212.

[86] A. M. Starkloff, "Physical training from a medical point of view," *Proceedings of the American Association for the Advancement of Physical Education*, 1886, *2:* 15-18.

Starkloff warned that the "scanty development of the ribs" in the American led to an "elongated thorax" or "tuberculous habitus," and he concluded that the physical construction of Americans predisposed to the development of tuberculosis. He urged the harmonious development of all the body systems with exercise, and he stated that tuberculosis predisposition could be counteracted by "the expansion of the youthful chest."

Tuberculosis was not the only disease that was felt to have origins in the faulty development fostered by the American environment.

> Traceable to the abnormal condition of our social life there is a whole army of nervous diseases: precocious maturity in children, nervousness and exhaustion in men and women; not to forget the whole array of intestinal diseases, which manifest themselves as dyspepsia, biliousness, habitual constipation and hypochondria,—these all are caused by the unequal balancing of our physical forces and capabilities.[87]

A noted orthopedist proposed serial anthropometric study of school children to screen for "lateral curvature of the spine," and there was serious discussion as to whether a family physician should prescribe corrective exercises.[88] Still another enthusiast advocated adoption of vertical script, in place of the standard slanted handwriting, and improved desks in order to correct the posture of children and avoid spinal malformations.[89]

Dr. D. A. Sargent gave popular voice to this philosophy of development in a series of articles in *Scribner's Magazine* beginning in 1887.[90] His articles included age-corrected percentile charts of adult height, weight, and some fifty other anthropometric measurements. His enthusiasm for the definition of the "typical man" rivaled that of Quetelet, and he sought to apply the principle to the prevention of all the ills of man, both individual and social. He decried the social tendencies of the age that fostered "inharmonious development" and advocated use of his charts to follow individual development. Sargent employed the technique of percentile ranking, introduced by Galton in 1883, and used it to further his theories of symmetrical development.[91] If one's height and weight were above the 80th percentile, then the laws of harmonious development dictated that chest girth, thigh diameter, and other parameters should also fall within the same range.[92] In the event of asymmetry, gymnastic training and physical education programs should be designed to correct the deficits.

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[87] *Ibid.*, p. 17.

[88] Charles L. Scudder, "The muscular element in the etiology of lateral spinal curvature," *Proceedings of the American Association for the Advancement of Physical Education,* 1891, *6*· 105-17.

[89] Edward R. Shaw, "Vertical script and proper desks as related to education," *Proceedings of the American Association for the Advancement of Physical Education,* 1895, *10.* 110.

[90] D. A. Sargent, "The physical proportions of the typical man," *Scribner's Magazine,* 1887, *2:* 3-17; "The physical proportions of the athlete," *Scribner's Magazine,* 1887, *2* 541-61; and "The physical development of women," *Scribner's Magazine,* 1889, *5.* 172-85

[91] Francis Galton, *Inquiries Into the Human Faculty and Its Development* (London: J. M. Dent and Sons, 1907).

Dr. William Townsend Porter, a physiologist at St. Louis Medical College, was equally enthusiastic about the use of growth charts, based on the generalizing method, in assessing the progress of individual children. In the early 1890s, Porter gathered statistics on St. Louis school children and used a much more thorough battery of measurements than had been previously employed.[93] To the basic measures of height and weight, pioneered by Bowditch, he added a variety of parameters, including chest girth, arm span, sitting height, acuteness of hearing and vision, and others. While Bowditch was interested in using *longitudinal growth trends* as an aid in prevention, and occasionally in diagnosis of disease, Porter sought a means of utilizing *data taken at a single time point* in assessing the child's health at the moment.

Porter concluded that while abnormal deviation in height and weight alone were of little prognostic interest, abnormal deviation in the relation of height to weight, and height to chest girth, were of prime importance. The physiologist reasoned that the bulk of the body's heat energy is expended in the form of radiation, and noted that the surface area of tall children is larger than that of small children. Hence, more heat is lost by tall children than by those of normal height. In addition, Porter asserted, greater height entails a disadvantage in mechanical labor, increasing the work demands on the heart and skeletal muscle. The disadvantage can be compensated only if the child has greater muscle mass, as measured by chest girth and weight. Porter concluded with an interesting medical analogy:

> A lack of proportion between height and other physical dimensions is itself ill health. The tendency of organisms to adapt ends to means is strong, and an imperfect compensation may suffice for most demands. A heart in which an hypertrophy of the left ventricle has partially compensated an insufficiency of the mitral valve may beat regularly enough for ordinary exertions, and yet fail utterly when its possessor is

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[92] Sargent, "The Physical Proportions of the Typical Man," 1887, *op. cit.* (n. 90 above), pp. 12-17. H. P. Bowditch reworked his statistics using percentile breakdowns in 1891, but he was much more critical of the method than was Sargent. Bowditch concluded that " . . a close maintenance of a given percentile rank by a growing child is by no means a universal rule," and he perceived the need to collect serial measurements on large numbers of children in order to study the predictive value of percentile ranking. "The growth of children, studied by Galton's method of percentile grades," *Annual Report of the Massachusetts State Board of Health*, 1891, *22*. 479-522.

[93] William T. Porter, "The growth of St Louis children," *Transactions of the Academy of Science of St. Louis*, 1893, *6* 263-369.

> forced suddenly to ascend a height or to make any other unusual exertion. So a tall child may have a sufficient income of energy to meet the demands of a wisely regulated life, and sink under the burden of unusual tasks.[94]

Thus, though a child may be functionally compensated in day-to-day life, the standard percentile charts, coupled with a single set of measurements, offered a tool whereby one might diagnose the potential of latent deficits. Like Sargent, Porter went so far as to *equate* good health with a normal relationship between height and other bodily dimensions, and he implied that the role of the physician lay in maintenance of the appropriate symmetry.[95]

Porter's second innovation was the discovery of what he called "the physical basis of dullness and precocity."[96] In all of the nineteenth-century anthropometric work, from Quetelet forward, there was a strong underlying belief in a close link between mind and body. Quetelet had hoped to measure moral and intellectual qualities, and Galton, in his studies on human faculties sought measurable parameters related to intellect.[97] In America, phrenologists lectured on the mind-body link, and physicians warned of the deleterious effects of mental strain on physical development. Given this background, it is no surprise that Porter should attempt to document a correlation between physical characteristics and mental ability. Using his St. Louis data and some circuitous reasoning, Porter "proved" that average precocity correlated directly with average weight.[98]

The assertion went unchallenged for years in the medical literature, reflecting the lack of sophistication in the medical world with respect to critical analysis of statistical data. Almost immediately, Dr. Bayard Holmes of Chicago gave Porter's study an outstanding review in the 1894 *New York Medical Journal.*

> Anthropometry infallibly discovers the child that is below the mean of his age. It separates every school into two classes—those physically competent and those physically incompetent for a clearly defined degree of mental work. When great numbers are considered, this system is practically absolute in its infallibility. Those children below the mean should be under almost paternal solicitude. Those below the twenty-five percentile grade should certainly be under the supervision of a properly experienced physician.[99]

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[94] *Ibid.*, pp 343-4.

[95] *Ibid.*, pp. 347-8.

[96] William T. Porter, "The physical basis of precocity and dullness," *Transactions of the Academy of Science of St. Louis*, 1893, *6:* 161-81.

[97] Quetelet, *op. cit.* (n. 21 above), p. 72 Galton, *Inquiries*, 1883, *op cit* (n. 91 above), pp. 1-23.

[98] Porter, "Physical Basis," 1893, *op. cit.* (n. 96 above), p. 168.

[99] Bayard Holmes, "A study of child growth: Being a review of the work of Dr. William Townsend Porter,

Though the child anthropometry movement was closely allied with reform causes from the start, Holmes' statements reflect the extent to which anthropometry was seized upon by some enthusiasts as a panacea, the physician's one-shot, "infallible" answer to the problems of the child.

It remained for social scientists outside the medical profession to correct some of the liberal interpretations of growth statistics espoused by members of the medical profession. Porter's "physical basis for dullness and precocity," in particular, was roundly attacked and refuted by Franz Boas, a Clark University anthropologist and statistician, in 1895.[100] Nevertheless, work similar to that of Porter, seeking measurable correlates of intelligence and mental ability, was simultaneously being undertaken by American experimental psychologists.[101] These studies eventually led to the enthusiastic acceptance of intelligence testing in America after the turn of the century.

By the 1890s American medical science had carried the application of anthropometry in the study of human growth to its logical conclusion, and in some cases to humorous extremes. The study of developmental biology progressed to a crescendo in the mid-1890s. Edward Hartwell found in his 1894 review that total anthropometrical publications before 1880 numbered only 18, while for the period 1880 to 1890 they numbered 99.[102] He noted that the material amassed was "so heterogeneous as to remind one of a heap of nuggets of crude ores of different kinds, which, to yield true metal, must needs be sorted, roasted, and refined." Hartwell, himself a physician, foresaw that anthropometric techniques would be exploited primarily by the social scientists, and, indeed, by the 1890s the leadership of the movement had passed from the hands of physicians into those of developmental psychologists and educators. Though physicians had played a part in the development of the techniques, there was insufficient interest on the part of medicine to pursue the implications. Psychologist G. Stanley Hall, a former associate of Bowditch, rode the tide of public interest in child welfare with his vigorous promotion of the Child Study Movement; and a large volume of psychology literature addressed itself to the assessment of normal child

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of St. Louis," *New York Medical Journal*, 1894, *60* 417-23. For further evidence of the impact of the Porter work, see *Proceedings of the American Association for the Advancement of Physical Education*, 1895, *10*· 42.

[100] Franz Boas, "On Dr. William Townsend Porter's investigation of the growth of the school children of St. Louis," *Science*, 1895, n.s. *1*· 225-30, 1895.

[101] James A. Young, *Mental Testing and Anthropometry in Early American Experimental Psychology*, unpublished undergraduate thesis, Harvard College, 1973.

[102] Hartwell, *op cit.* (n 6 above), pp. 554-8.

development.[103] This research eventually led to the creation of twentieth-century instruments like the Denver Developmental Screening Test, which is widely used in current pediatric preventive medicine.[104] As has been shown, the early work of Chaille on developmental milestones was closely linked with the anthropometric growth study, and there can be little doubt that the advent of developmental screening was at least an indirect result of early efforts in growth measurement.

Luther Emmett Holt, one of the founders of the American Pediatric Society, became the first pediatric author in this country to recognize publicly, in 1894, the importance of observing growth. In his immensely popular manual for mothers, *The Care and Feeding of Infants,* Holt emphasized the importance of frequent weighing and included appropriate normal guidelines. In his 1897 pediatrics text, *The Diseases of Infancy and Childhood,* Holt included a 16-page chapter on growth and development, including growth charts.[105] Previous texts, American and European, contained at best a few lines on the subjective assessment of body morphology and development.[106] By 1890 the basic ideas which constitute the substance and the rationale for modern-day pediatric growth charts had been formulated. The 1943 United States Public Health Department version is based on studies of children in Boston, and is in use in virtually every pediatric screening clinic in the country at present.[107] The charts, with their plot of mean growth and percentiles, differ very little from the graphs published in nineteenth-century anthropometric literature (Figures 1 & 2).

There was probably only gradual acceptance of the usefulness of routine weighing and measuring among medical practitioners around the turn of the century. Medical practice in the 1890s was still highly variable and sectarian, and acceptance of contributions from basic science was extremely slow.[108] By examination of early twentieth-century textbooks of pediatrics, it is pos-

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[103] Dorothy Ross, *G. Stanley Hall. The Psychologist as Prophet* (Chicago: The University of Chicago Press, 1972), pp 379-408.

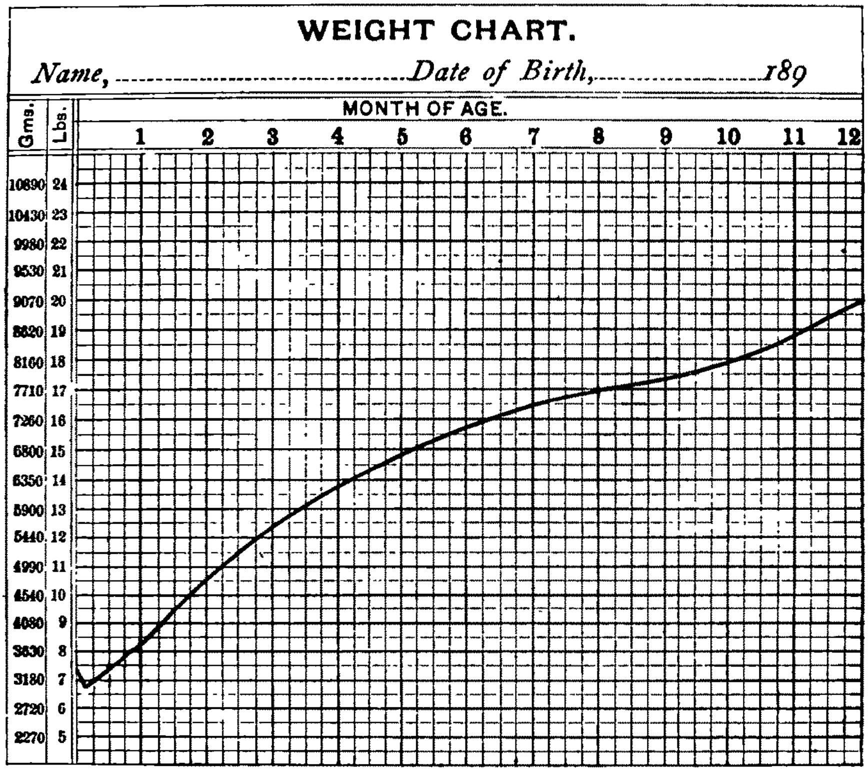
[104] William K. Frankenburg, and Josiah B. Dodds, "The Denver developmental screening test," *Journal of Pediatrics,* 1967, *71* 181-91.

[105] Luther Emmett Holt, *The Care and Feeding of Infants. A Catechism for the Use of Mothers and Children's Nurses* (New York: D Appleton, 1894), and *The Diseases of Infancy and Childhood* (New York. D. Appleton, 1897), pp 15-31.

[106] See, for example, J. Forsyth Meigs and William Pepper, *A Practical Treatise on the Diseases of Children* (Philadelphia: Lindsay and Blakiston, 1870), 4th ed , pp 27-8

[107] Harold C Stuart and Howard V. Meredith, "Use of body measurements in the school health program," *American Journal of Public Health,* 1946, *36* 1365-86.

[108] Rothstein, *op. cit* (n. 9 above), pp. 10-25 R. H. Shryock, "American indifference to basic science during the nineteenth century," in *Medicine in America,* 1966, *op cit* (n. 33 above), pp. 71-89.



The weight curve of the first year.

Figure 1. Anthropometric chart for plotting growth of infant children, published in Luther Emmett Holt's *The Diseases of Infancy and Childhood,* 1897.

sible to follow the change in the subject matter taught to physicians in training over a period of years. Dr. Wilburt Davison, later to become the first Chairman of the Department of Pediatrics at Duke University Medical School, wrote his *Pediatric Notes* in 1926 as a resident at Johns Hopkins.[109] Though the text contains no mention whatsoever of growth assessment, normal age-weight and age-height charts are appended. In his 1934 first edition of *The Compleat Pediatrician,* designed as a set of notes for medical students and housestaff, Davison included several pages of discussion of growth, including normal data on height, weight, and head circumference. Only in the 1940 third edition did Davison expand his discussion of normal

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[109] Wilburt C Davison, *Pediatric Notes* (Baltimore, Waverly Press, 1926).

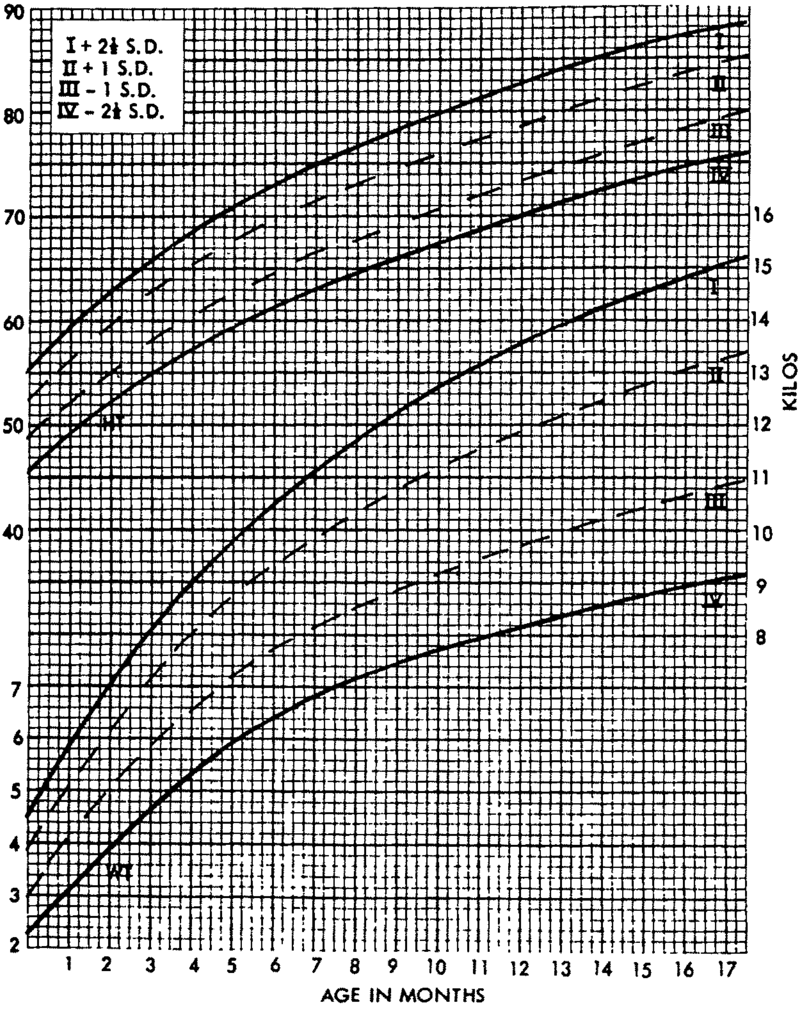

Figure 2. Modern, percentile-graded anthropometric chart for plotting weight and height of infant boys. This chart is currently in use in the University of California, San Francisco, pediatric clinics.

growth and development to a full 20-page chapter.[110] Thus, there was a considerable lag time, perhaps as much as 50 years, in the diffusion of the principles into general teaching and practice.

The science of anthropometry as it applied to preventive medicine seemed to have little impact on the emergence of a specialty of pediatrics, symbolized by the formation of the American Pediatric Society in 1888. With few exceptions, those physicians interested in anthropometry had not been pediatricians, primarily interested in treating acute illnesses of infants and children. Instead, they were anthropologists and physiologists, whose primary interests lay in preventive medicine and public health. Pediatrics emerged in the context of the general drift toward specialization within the profession of medicine, the focus of social reform interests on the child and his health needs, and the vastly improved understanding of infectious disease. Pediatric literature of the time was almost exclusively related to acute infectious diseases, and preventive medicine and public health measures were discussed only insofar as they were related to infectious disease.

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[110] Wilburt C. Davison, *The Compleat Pediatrician* (Durham: Duke University Press, 1934, 1st ed., 1940, 3rd ed.).

Longitudinal weighing and measuring, except in the eyes of the most vocal converts, was useful only in screening for congenital and chronic diseases, and it did not deal squarely with what were seen to be the more critical questions of diagnosis, treatment, and prevention of the acute infectious diseases.[111] Without doubt, the great strides in reducing infant mortality came through sanitary reform, control of infectious diseases, and improved nutrition, rather than through use of growth charts and developmental standards. Only in this generation, with the fading of the golden age of infectious disease and antibiotics, has pediatrics begun to concentrate its efforts on chronic diseases, developmental disorders, and preventive medicine.

Conclusion

The evolution of medical thought on a given idea is best understood by thorough study of intertwining currents of contemporary social, intellectual, and scientific trends. The development of medical thinking on growth seems to have involved three basic steps: the awareness that men and women of different nationalities and racial backgrounds have different appearance, stature, and growth patterns; the realization that socioeconomic conditions and environment influence growth and development; and the discovery that disturbance of growth and development from normal standards may reflect an insidious or chronic disease process. American medical interest in anthropometry arose in the context of a century-old inferiority complex, which in turn was engendered by the identity crisis of a young nation. Henry Pickering Bowditch led investigations designed to clarify the alleged inferiority in health and stature of Americans. Strongly influenced by English anthropometric studies with different orientations, Bowditch discovered that socioeconomic environment influences growth parameters of populations, and he eventually concluded that disease affects growth of the individual.

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[111] See Rosenkrantz, *op. cit* (n. 42 above), pp. 55-73.

Numerous potential applications of this concept were explored by contemporary physicians interested in public health. Important and enduring techniques arising directly or indirectly from nineteenth-century anthropometry include use of standard growth charts, developmental screening tests, and intelligence tests. Most important, however, is the fact that the anthropometric studies introduced American medicine to the thorny conceptual and technical problems of collection, statistical interpretation, and rational application of population data. These principles constitute the cornerstone of clinical and epidemiological investigation in modern medicine.

Though all of the important conceptual steps occurred before 1885, the importance of serial weighing and measuring was accepted only gradually, and without the fanfare of other medical innovations. Boulton, in 1876, referred to the weighing machine as a "homely instrument," and it is still regarded as such today.[112] Only in recent years has developmental study attained equal stature alongside the more immediately rewarding and acute care-oriented disciplines of study in pediatrics. Nonetheless, most of us alive today have vivid childhood memories of the doctor's office—its ominous, medicinal odor, its frightening needles, its hard white examining tables, and, of course, its ever-present height standard and scales.

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[112] Boulton, 1876, *op. cit* (n. 64 above), pp 280-2.

THE RISE AND FALL OF BATTEY'S OPERATION: A FASHION IN SURGERY*

LAWRENCE D. LONGO

During the latter nineteenth century many women underwent bilateral oöphorectomy for amenorrhea, dysmenorrhea, menometrorrhagia, and a variety of other conditions variously termed pelvic neurosis, oöphoro-mania, and ovarian epilepsy. Generally these women were relatively young—the average age estimated to be thirty years—and their ovaries were free from overt pathology. The avowed purpose of this procedure was to produce a surgical menopause in an attempt to alleviate the patient's debilitating symptoms. This operation originated with Robert Battey, a surgeon in Rome, Georgia, and became popular not only in America, but in England and on the Continent. Among its proponents were J. Marion Sims and Lawson Tait.[1] On the one hand the operation was hailed as one of the unequaled "triumph[s] of surgery."[2] And Battey described as leaping "over the legitimate bounds of surgery and traveling in paths hitherto untrod."[3] Physicians who failed to perform the procedure when such conditions were indicated were cited as "wanting in humanity"[4] and accused of criminal neglect of their patients.[5] On the other hand, this procedure was dubbed "castration"[6] "spaying,"[7] "desexing" and "unsexing" and decried as a pernicious and dreadful operation.[8] Moreover, surgeons who carried out such procedures were labeled "gynecological perverts."[9]

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* This is an expanded version of a paper presented at the 51st annual meeting of the American Association for the History of Medicine, Kansas City, May 12, 1978

[1] J. Marion Sims, "Remarks on Battey's operation," *Brit Med J*, 1877, *ii*· 793-794, 840-842, 881-882 and 916-918, Lawson Tait, "Removal of normal ovaries," *ibid*, 1879, *i* 813-814.

[2] E. W. Cushing, "Report of a case of melancholia; masturbation; cured by removal of both ovaries," *J.A.M A*, 1887, *8*· 441-442

[3] E. P. Becton, "Batty [sic] and Batty's [sic] operation," *The Texas Courier-Record of Medicine (Dallas)*, 1888, *6:* 34-35.

[4] Cushing, *op. cit.* (n 2 above).

[5] H. H. Carstens, "Three cases of Battey's operation," *Amer. J. Obstet & Dis. Women & Child*, 1883, *16* 266-271.

[6] A. Hegar, *Die Castration der Frauen vom physiologischen und chirurgischen Standpunkte aus* (Leipzig: Breitkopf und Härtel, 1878).

[7] E H. Trenholme, "Two cases of ovariotomy or spaying," *Obstet. J Great Britain and Ireland*, 1876, *43* 425-435; J. H. Aveling, "The spaying of women A note historical and philological," *Obstet J. Great Britain (London)*, 1879, *11*. 617-621.

Because since the turn of the century bilateral ovariotomy, or "Battey's operation," has attracted little attention, this essay considers problems relating to the origin and development of Battey's procedure: exactly what constituted Battey's operation and the indications for which it was employed; the origin of the term "Battey's operation"; the surgical results and postoperative sequelae; the extent to which it was practiced in America and Europe; the factors which accounted for its popularity; the reasons that it fell into disfavor and ultimate rejection; and the extent to which Battey's operation contributed to advances in pelvic surgery and an understanding of ovarian function and endocrinology.

Although Ephraim McDowell performed his first ovariotomy in 1809,[10] this operation only rarely was performed during the remaining first half of the nineteenth century. However, with the advent of anesthesia, by the mid-1860s many surgeons were performing ovariotomy, or oöphorectomy as it later was called.

Battey himself was an accomplished surgeon. Although this essay makes no attempt to review his life per se, some aspects of his career are relevant to his surgical contributions. Battey spent two sessions at Thomas Jefferson Medical College, part of the time studying under Charles D. Meigs[11] and graduating in 1857. The same year he also received a diploma from the Obstetrical Institute of Philadelphia.[12] In 1859 he toured Ireland, Great Britain, and the Continent, where he met, among other great surgeons, Spencer Wells, who was just commencing his brilliant career in ovariotomy. Battey is recorded to have determined to try the next case for which ovariotomy was indicated.[13] With the outbreak of the Civil War in the spring of 1861, Battey entered the Confederate Army and during the four years of the war served in several capacities, both in the field and as chief surgeon of several army hospitals, thus establishing his surgical reputation.[14] Following the Confederate surrender in April 1865, Battey returned to Rome to resume his practice. In May 1869, he performed his first ovariotomy, successfully removing a thirty-pound dermoid cyst from a physician's wife. By August 1872, when he performed his first "normal" ovariotomy, Battey was considered one of the foremost surgeons in Georgia, if not in the South.[15] He established a Gynecological Infirmary in Rome where he kept his patients, later enlarging this to the Martha Battey Hospital, named in recognition of his wife, who assisted him with the operations and nursed the patients postoperatively. For two years starting in 1873, he held the chair of professor of obstetrics at the Atlanta Medical College, but apparently this aspect of medicine held little attraction for him. During the same period he also served first as corresponding editor and then as editor-in-chief of the *Atlanta Medical and Surgical Journal.* He was a founding member of the American Gynecological Society, a group of the most prestigious gynecologic surgeons in this country, and in 1888 served as its president.

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[8] C Tyrone, "Certain aspects of gynecologic practice in the late nineteenth century," *Amer. J Surg.*, 1952, *84* 95-106.

[9] N. Barnesby, *Medical Chaos and Crime* (New York. Mitchell Kennerley, 1910), pp. 231-252

[10] E McDowell, "Three cases of extirpation of diseased ovaria," *Eclect. Repertory & Analyt. Rev* , 1817, *7*. 242-244.

[11] R Battey, "Address by Dr. Robert Battey, Rome, Georgia," *Trans S Carolina Med. Assoc., 1889,* 61-68.

[12] J. A Eve, "A sketch of the life and labors of Dr. Robert Battey of Rome, Georgia," *Virginia Med. Mthly* , 1878, *5* 1-8.

[13] *Ibid*

[14] *Ibid.*

Battey's idea of normal ovariotomy developed following the death of a patient. In 1865 two young women consulted him for amenorrhea with severe symptoms associated with the molimen. The first woman soon died, and he operated on the second. Because these women's illnesses profoundly influenced his thinking, I shall detail their records.

The first patient, a 21-year-old woman, Mary ____, consulted Battey for primary amenorrhea associated with "violent perturbations of her nervous and vascular system."[16] For five years she had experienced regular bouts of extreme mental and physical suffering at the time of the menstrual molimen. In addition, she was said to have symptoms of "endocarditis" with cardiac hypertrophy. Physical examination revealed no evidence of a uterus. Otherwise, she was described as being "in the bloom of early womanhood—gifted with charms beyond the lot of the majority of her sex." Battey reasoned that "if she could be relieved of her ovaries . . . the menstrual molimen would cease; the violent strain upon the heart would be at an end; there might be hope for her." He searched in vain for a precedent—an authority who advocated ovariotomy. For unexplained reasons this patient grew worse and she died. That Battey was affected deeply by the death of this model southern belle is evidenced by his repeated reference to her for over three decades. He resolved that "another such case should not perish in my keeping without my reaching out a friendly hand in the hope of rescue."

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[15] *Ibid*

[16] R. Battey, "Normal ovariotomy-case, *Atlanta Med & Surg J*, 1872/3, *10:* 321-329, and *Richmond & Louisville Med J*, 1872, *14* 711-729.

About the same time a 23-year-old woman, Julia Omberg, with somewhat similar complaints came under his care. She, too, suffered from severe molimenal symptoms and had experienced only two "normal" menstrual periods since her menarche. Menstruation was accompanied by epileptiform convulsions which left her in a semi-comatose state.[17] She also developed pulmonary congestion with occasional hemorrhage, and acute articular rheumatism. Repeatedly she experienced debilitating bouts of gastric and rectal bleeding with debilitation at five-to-eight-week intervals, and developed a pelvic abscess which ruptured into the rectum. The patient later reported that "her sufferings were most intense . . . (she) felt there was no future for her in this life, and that death would be a relief."[18]

Battey diagnosed chronic corporeal endometritis and treated the patient with intrauterine silver nitrate and other measures. As with many of the patients upon whom he and other surgeons were to operate, she "had become habituated to the use of morphia—taken to mitigate her long years of suffering—and her usual dose (was) a full grain of the sulfate." In the spring of 1872 the patient, who by now was thirty years old, improved following one of these particularly severe crises and Battey broached the idea of "a normal ovariotomy for her radical cure." He observed that this concept was "the creature of my own thought . . . ," and following long and deliberate contemplation[19] Battey wrote to several noted gynecologists seeking advice on the propriety of such a procedure. For instance, his inquiry addressed to members of the Gynaecological Society of Boston was discussed at its meeting of 4 June 1872.[20]

After some delays because of the patient's condition, Battey finally operated on 17 August 1872. He removed both ovaries, which appeared grossly normal. Although the patient apparently developed peritonitis, she recovered. Battey later recounted not only that postoperatively he personally had housed the patient, "spending ten days at her bedside, without leaving the house for a moment, even for a change of linen," but also that during this time "in the office of one of my brother practitioners were held nightly meetings of the profession of my town . . . awaiting her demise with anxious longings in order to institute proceedings in our court and put me before the bar as a criminal.''[21]

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[17] R. Battey, "Extirpation of the functionally active ovaries for the remedy of otherwise incurable diseases," *Trans. Amer. Gynec. Soc.*, 1876, *1*: 101-120.

[18] W. F. Westmoreland, "Report on Battey's operation," *Atlanta Med. & Surg. J.*, 1872/3, *9*: 231.

[19] R. Battey, "Battey's operation," in, *A System of Gynecology, by American Authors*, M. D. Mann, ed. (Philadelphia: Lea Brothers and Company, 1888), vol. II, pp. 837-849.

[20] R. Battey, "The propriety of the performance of normal ovariotomy in a case of absence of the uterus with excessive nervous irritation," *J. Gynaec. Soc. Boston*, 1872, *7*: 331-335 and 339-340.

Within a month Battey's report of ''normal ovariotomy'' with a description of the patient's course during her first 31 postoperative days appeared in the *Atlanta Medical and Surgical Journal,* and the same account was published the following January in the *Richmond and Louisville Medical Journal.*[22] Subsequently he described the patient's continued improvement for seven months.[23] Following ovariotomy the patient's ''menstrual'' molimen disappeared, as did her nervous phenomena, convulsions, pelvic inflammations, abscesses and hematocele. In a brief, independent report W. F. Westmoreland, a friend (and co-editor of the *Atlanta Medical and Surgical Journal*) observed[24] that Miss J(ulia) presented ''all the evidences of the most perfect health . . . ,'' despite her claim that her previous sufferings had been even greater than those recorded by Battey.

Subsequently Robert Battey reported cases of this operation in more than twenty publications over a period of almost two decades from 1872 to 1890. Although he continued to stress that he was removing only normal ovaries to produce an artificial menopause, he later[25] noted that the term ''normal ovariotomy'' was an ''unfortunate and obsolete'' choice and he stressed that the ovaries so removed were distinctly abnormal. His operative technique itself underwent several changes. During the first few years he performed ovariotomy in some instances using a vaginal approach. These early operations included numerous instances of unilateral oöphorectomy, and he recommended the use of the écraseur. Later, as the results became manifest, he stressed the importance of an abdominal approach for bilateral oöphorectomy in which the ovarian pedicles were ligated with silk sutures. At no time did he advocate removal of the fallopian tubes, as did Lawson Tait (see below), nor did he practice clitoridectomy or other ''desexing'' procedures. While he desired to produce an artificial menopause, originally he was somewhat ambivalent on whether a bilateral oöphorectomy was necessary for this effect. In his early cases in which he believed only one ovary was "viciously or abnormally performing its functions,"[26] Battey removed only that single organ. However, he later confessed that these very patients were the least benefited by the procedure. Undoubtedly, a single ovary was removed in some of those cases because of the inadequate operative exposure through the vagina.

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[21] R. Battey, "A history of Battey's operation," *Atlanta Med. & Surg. J.*, 1886/7, *n.s 3* 657-675, and T. A. Reamy, "In memoriam, Robert Battey, M. D., LL.D., Rome, Georgia," *Trans. Amer. Gynec. Soc* , 1896, *21* 467-472.

[22] R. Battey, *op. cit.* (n. 16 above)

[23] R. Battey, "Normal ovariotomy," *Atlanta Med. & Surg. J* , 1873/4, *11* 1-22 and 65-84, and *Trans. Med Assoc Georgia*, 1873, *24*. 36-69.

[24] W. F. Westmoreland, *op. cit.* (n 18 above)

[25] R. Battey, "Castration in mental and nervous diseases. A symposium," *Amer J Med Sci* , 1886, 92. 483-490

Undoubtedly, a major problem with Battey's operation was that its indications never were defined explicitly. Although Battey repeatedly presented indications that he considered valid they remained rather ill defined. In addition, while he stated that his procedure was a *dernier ressort* for desperate cases, many of the procedure's advocates, if not Battey himself, tended to regard it as a panacea. Initially (in 1872) he removed normal human ovaries "with a view to establish at once the 'change of life' for the effectual remedy of certain otherwise incurable maladies."[27] He wrote, "I have hoped, through the intervention of the great nervous revolution which ordinarily accompanies the climacteric, to uproot and remove serious sexual disorders and reestablish the general health."[28] Battey distinguished between his "normal ovariotomy" and the ovariotomy performed by the successors to McDowell. He stated, ". . . it was I who had really and truly done an ovariotomy, rather than Dr. Ephraim McDowell," . . . I felt that my operation was "*regular* ovariotomy, and McDowell's (for ovarian tumors) *irregular*." Although defending the expression "normal ovariotomy," he confessed that this term met with no favor from his professional brethren, noting that because it served to obscure rather than elucidate his meaning, he would abandon it even though he was unable to find a suitable substitute.

Originally Battey presented the prime indication for surgery as "any grave disease which is either dangerous to life or destructive to health and happiness, which is incurable by other and less radical means."[29] At the American Gynecological Society meeting in 1877, Battey presented four indications for surgery: (1) when life is endangered in the absence of the uterus; (2) with obliteration of the uterine cavity or vaginal canal that cannot be surgically restored; (3) in cases of insanity or epilepsy caused by uterine or ovarian disease; and (4) in cases of protracted physical and mental suffering associated with monthly nervous and vascular perturbations.[30] However, he confessed that in some cases he experienced great difficulty in reaching a decision on whether to operate. Later Battey further refined the indications for surgery as oöphoromania, oöphoro-epilepsy, and oöphoralgia.[31] In ascribing the cause of mania and epilepsy to the ovaries rather than to the uterus as was the more accepted practice of the time, he perhaps set the stage for the wholesale abuse the procedure was to suffer. Indeed, what woman with pelvic pain, hysteria, or a convulsive disorder might not be a candidate for ovariotomy? Although he stated that he would never operate on a patient for nymphomania,[32] he did in fact operate for this condition.[33] When physicians would inquire, "[Do you] operate for dysmenorrhea, for amenorrhea, menorrhagia, for bleeding myoma, for epilepsy, for nymphomania, or for oöphoromania," he would answer, "Both yes and no. Yes under certain circumstances, and no under other conditions."[34] He attempted to resolve this seeming paradox by basing his decision to operate upon three questions: (1) Is this a grave case?; (2) Is it incurable by other means?; and (3) Is it reasonable to expect a cure by this method?[35] Battey concluded that if one could reply in the affirmative to these questions the case was a "proper one."[36] However, he maintained that he operated on only a small percentage of the cases offered. His thesis at this time appeared to be that if the patient's health was "broken down by the vitiated function of her ovaries" and she was "utterly miserable and without remedy," he would remove the offending organs unhesitatingly. Battey boasted, "I decide, in such cases that the sacrifice of the ovaries shall be made, and I believe I do God a service when I sacrifice them."[37]

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[26] R. Battey, *op. cit* (n. 17 above), p 112

[27] R. Battey, *op. cit* (n. 16 above), p 321, and "Normal ovariotomy," *Trans. Med Assoc. Georgia*, 1873, *24* 36-69.

[28] R. Battey, *op. cit.* (n. 17 above), p. 102.

[29] R Battey, *op cit.* (n 17 above), p. 113.

[30] R. Battey, "Is there a proper field for Battey's operation?" *Trans Amer. Gynec Soc* , 1877, *2* 279-305.

Despite this list of broad indications, Battey occasionally admitted that the operation was being performed too frequently and that the indications had become too general. He also confessed that in several cases he had recommended the procedure prematurely, for the patients had improved despite their refusal of surgery.[38] Finally, in an almost prophetic note, he inquired

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[31] R. Battey, *op. cit* (n 25 above), p. 484.

[32] R. Battey, *op cit.* (n. 17 above).

[33] R. Battey, "Battey's operation—its matured results," *Trans. Amer. Gynec Soc* , 1887, *12* 253-274

[34] R. Battey, "Battey's operation Its object, results, etc.," *Trans Med Soc. Virginia*, 1887, *10* 188-193.

[35] R. Battey, "Occlusion of the entire utero-vaginal canal, following labor, with distressing sequelae of unrelieved menstrual molimen—Battey's operation—cure," *Trans. Med. Soc Virginia*, 1879, *2* 432-438.

[36] R. Battey, *op cit.* (n. 34 above), p. 190

[37] R. Battey, "Discussion. Pelvic inflammations, or cellulitis versus peritonitis, T. A Emmet," *Trans. Amer Gynec Soc.*, 1886, *11*: 111-114

[38] R. Battey, *op. cit.* (n. 37 above), p. 112.

"whether in cases of hysterectomy extirpation of the ovaries should not be a part of the operative procedure."[39]

At the 1886 International Medical Congress, Battey gave the only gross description of the ovarian pathology in his cases.[40] He noted that the organs often contained numerous small cysts, the lining of some of which appeared inflamed. He described other ovaries with a thickened, blanched, corrugated, sclerotic surface and fibrous stroma. Many appeared shrunken and "senile." (He included no microscopic findings.) The following year he noted[41] that the two characteristic pathologic findings were cystic degeneration of organs that were but little enlarged although attended by great pain, and "a sort of sclerosis" with thickening of the surface and degeneration of the stroma.[42] On the other hand, he declared that the presence of ovarian pathology was not necessary for the operation. "I will interfere without hesitation. I ask nobody whether her ovaries are diseased or not. Of course, when I take them out, if I find those ovaries diseased, I felicitate myself that I have come within everybody's rule when that is the case, but I should not hesitate a moment, if I was satisfied that the patient was incurable, that her case was an extreme one. . . ."[43]

The eponymic appellation of bilateral ovariotomy first appeared in the title of Battey's presentation before the American Gynecological Society when he considered the question, "Is there a proper field for Battey's Operation?"[44] A few months later Sims, who had assisted Battey with several of his cases,[45] also used the term "Battey's operation,"[46] after noting that Battey had asked him to name the procedure. Sims stated that Battey was the first to recognize the systemic effects of an "unrelieved menstrual molimen," the first to suggest a method of cure, and the first to carry out his own suggestion. He continued: "I have always thought that 'Battey's operation' would be the most appropriate name for it, and cherish the hope that the profession in Europe will unite with us in America in giving it the name of the man who originated the operation, and who has, by the most indomitable courage, succeeded in proving its usefulness."[47] Undoubtedly, as an early champion of bilateral ovariotomy, Sims, one of the world's leading gynecologic surgeons, helped make the procedure respectable.

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[39] R. Battey, "What is the proper field for Battey's operation?" *Trans Amer Gynec. Soc* , 1880, *5* 38-43.

[40] R. Battey, *op cit.* (n. 25 above).

[41] R. Battey, *op cit* (n. 34 above), p 188

[42] R. Battey, *op. cit.* (n. 34 above), p 191

[43] R. Battey, *op. cit.* (n. 21 above), p. 665.

[44] R. Battey, *op. cit.* (n. 30 above), p 279

[45] R Battey, *op cit.* (n. 17 above)

[46] J M Sims, *op cit.* (n 1 above).

[47] *Ibid*, p. 918.

An additional consideration is the end result of Battey's operation. Battey summarized the outcome of his cases in numerous reports.[48] Although he explicitly described only about seventy cases, he is believed to have performed the procedure on several hundred women.[49] Of his first seven cases of bilateral ovariotomy, three women were cured completely, two were improved only slightly, and two women died postoperatively, apparently from peritonitis. The mortality rate in this first group was 22%, a not unreasonable rate when compared with about 30% for ovariotomy in general.[50] Despite the fact that these were not ovarian tumors, the operative procedure was fraught with difficulty. Battey recalled one case thus: ". . . the ovary (was) found to be imbedded in pelvic lymph. The identification of the ovary [Battey himself being in doubt] was confirmed by the practical touch of Dr. Sims, and proved beyond controversy by portions of the stroma brought out upon my fingernail. . . . It was found impracticable to isolate the gland entirely and I contented myself with such disintegration as I could effect with my fingernail."[51] By 1880 Battey reported that in the eight years since he had invented the procedure, over one hundred cases had been performed among three surgeons, and probably more than two hundred cases were recorded.[52]

In a report to the 1881 International Medical Congress in London,[53] Battey tabulated 193 cases of bilateral oöphorectomy by 47 different operators. Although the overall mortality was 18 percent, he recorded that Lawson Tait and Thomas Savage had each performed the procedure 26 times without a single death. (In this same report he recorded perhaps the strangest postoperative sequela of his procedure, a patient who subsequently bore a living child. Presumably one ovary was removed only incompletely.)[54] A few years later he reported 36 consecutive personal cases[55] (in most of which he had employed Listerian antisepsis) without a death. For the first time Battey also presented results for the various indications of ovariotomy. His most favorable results were in the nine cases of oöphoro-epilepsy, all of whom Battey claimed were promptly and completely cured of their epileptiform manifestations and neurotic symptoms. He noted that of twenty patients with oophoralgia, thirteen were cured, but four women failed to be relieved of their pelvic pain and persisted in "their opium habit." The poorest results were noted in seven women with oöphoro-mania. Most of these latter patients had been ill for from three to fourteen years and three had been institutionalized in an "asylum." Only one patient was "cured," four were improved somewhat, and two showed no improvement. In later reports he included up to 72 patients, noting that many of the failures were associated with opium and morphine addiction. He also recorded that cessation of menses occurred in all but seven percent of these patients. By 1888, the year of his last substantive paper,[56] one of Battey's admirers stated that among Battey's last one hundred cases of bilateral ovariotomy the mortality rate was three percent.[57]

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[48] R. Battey, *op cit* (n 11 above, n 17 above, n. 19 above, n 21 above, n. 25 above, n 33 above, n. 34 above, n. 39 above), "Summary of the results of fifteen cases of Battey's operation," *Brit. Med J.*, 1880, *i*· 510-512; "Oophorectomy—Battey's operation—spaying-castration of women," in, *Transactions of the International Medical Congress, Seventh Session* (London· J. W Kolckmann, 1881). vol. 4, pp. 279-288 and 291-297, "Antisepsis in ovariotomy and Battey's operation—Eighteen consecutive cases—all successful," *Virginia Med Mthly* 1883/4, *10*. 291-304; "Antisepsis in ovariotomy and Battey's operation—Thirty consecutive cases—all successful," *Trans Med Assoc. Georgia*, 1884, *35*· 151-165, "Conditions of success in ovariotomy," *Atlanta Med & Surg. J.*, 1885, *n s. 2*· 1-7.

[49] E. P Becton, *op cit.* (n. 3 above).

[50] E. R. Peaslee, *Ovarian Tumors· Their Pathology, Diagnosis and Treatment, Especially by Ovariotomy* (New York· D. Appleton and Company, 1872).

[51] R. Battey, *op. cit.* (n. 17 above), pp. 104-105

[52] R Battey, *op cit* (n. 39 above), p. 38.

[53] R. Battey, "Oophorectomy—Battey's operation—spaying-castration of women," in, *Transactions of the International Medical Congress, Seventh Session* (London. J W Kolckmann, 1881), vol 4, pp. 279-288 and 291-297.

In addition to Battey's personal experience, it is appropriate to consider the extent to which Battey's operation was practiced elsewhere in America and Europe. During the last three decades of the nineteenth century, the removal of normal ovaries for various maladies, real or imagined, gained widespread popularity. One writer estimated that by 1906 about 150,000 women had undergone the procedure,[58] but the basis for that estimate was not given. Even allowing that only one out of every one hundred cases was reported, that estimate would appear inflated about tenfold. Undoubtedly, to a large extent the appeal of ovariotomy followed the surgeons' attempts to develop procedures that would cure supposed derangement of the body's "special nerve force." Such alterations were believed commonly to result in hysteria in women and spermatorrhea in men.[59] Some of the procedures employed included clitoridectomy, operations for vaginismus and coccyodynea; and forcible dilatation of the sphincters of the vagina and rectum.

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[54] *Ibid* p. 284

[55] R Battey, *op. cit.* (n. 25 above), p 483, and "Antisepsis in ovariotomy and Battey's operation," *Kansas City Med Index*, 1887, *8* 1-12.

[56] R. Battey, *op. cit* (n. 11 above, n. 19 above)

[57] E. P Becton, *op. cit* (n. 3 above), p. 35

[58] E Van De Warker, "The fetich [sic] of the ovary," *Amer J Obstet. Dis Women and Child* , 1906, *54.* 366-373.

[59] J T Gilmore, "Normal ovariotomy," *Atlanta Med. & Surg J* , 1873/4, *11* 175-176.

Battey's interest in normal ovariotomy developed during the renaissance of ovarian surgery. The publication in the same year of Battey's first report of Peaslee's opus on ovarian tumors[60] (1872) and the following year of the monograph by W. L. Atlee[61] undoubtedly helped establish the acceptability of ovariotomy in America.[62]

Apparently James Blundell of London first suggested extirpation of healthy ovaries. In a paper read to the (Royal) Medical and Chirurgical Society,[63] he concluded from experiments on rabbits, "That the womb, spleen, and ovaries may be taken away . . . without the necessity of destroying life." He continued[64] that the operation . . . would probably be found an effectual remedy in the worst cases of dysmenorrhea and in periodic bleeding from an inverted womb which could not be removed. Apparently, however, he did not regard this suggestion as very practical for he noted that the procedure "can scarcely in any instance be necessary."[65] Actually, previous writers had suggested male castration for the cure of satyriasis[66] and it was carried out as a cure of insanity,[67] but apparently it had not been performed to any great extent.

The first public discussion of Battey's operation occurred at the 4 June 1872 meeting of the Gynaecological Society of Boston[68] following Battey's inquiry regarding his idea. Several of the members looked with favor on Battey's proposal and declared that a surgeon was unjustified in withholding relief for want of a precedent.[69] In fact, one member suggested that because the ovaries played the most important role in the female, the Society's motto should be changed to "Propter Ovarium" from "Propter Uterum."

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[60] E. R. Peaslee, *op cit.* (n. 50 above).

[61] W L. Atlee, *General and Differential Diagnosis of Ovarian Tumors, with Special Reference to the Operation of Ovariotomy, and Occasional Pathological and Therapeutical Considerations* (Philadelphia. J. B. Lippincott, 1873)

[63] As an aside, Peaslee pointed out the barbarous Latin and Greek conjugate in the word "ovariotomy" (cutting an ovary), which had been introduced by James Young Simpson. Peaslee compounded from Greek roots the more proper term "oöphorectomy" (to cut out the ovary). Some surgeons then adopted the term oophorectomy" when referring to Battey's operation, and retained the term ovariotomy for removal of ovarian tumors (A J. C. Skene, *Treatise on the Diseases of Women for the Use of Students and Practitioners* (New York: D. Appleton, 1888))

[63] J. Blundell, *Researches Physiological and Pathological Instituted Principally with a View to the Improvement of Medical and Surgical Practice* (London· E. Cox and Son, 1825).

[64] *Ibid*, p. 26.

[65] *Ibid* p. 26.

[66] H. J. Bigelow, "Castration as a means of cure for satyriasis," *Boston Med. & Surg. J.*, 1859/60, *61* 165-166

[67] J. H. Marshall, "Insanity cured by castration," *Med. & Surg. Reporter*, 1865, *13* 363-364.

[68] R Battey, *op cit.* (n 20 above), p. 331.

[69] *Ibid*, p. 334.

Battey's initial case report received a mixed reception. Within two months of its publication, the editor[70] of the *Richmond and Louisville Medical Journal* insisted that since bilateral ovariotomy was well known to have no effect on the menstrual cycle, Battey was incorrect in believing that it could, and "regretted" that he had failed to publish the views of many authorities to this effect. Only four months after Battey's first case, J. T. Gilmore, professor of surgery at the Medical College of Alabama, successfully performed normal ovariotomy.[71] The *American Practitioner* of December 1875[72] carried a rather remarkable ten-page interview with Battey by Drs. D. W. Yandell and Ely McClellan of Louisville, who had observed Battey perform several operations. In closing their report, these writers noted the precedure's simplicity and the facility with which Battey worked. They also observed: "Any tyro may perform the initiatory steps, but it requires a profound gynecologist to complete the operation,"[73] adding that the operation demanded a thorough knowledge of anatomy and an "educated" finger.[74] Although unwilling either to advocate or to decry the procedure, they quoted T. Gailliard Thomas that it could be greatly abused. Within a few years, reports of successful cases appeared from at least three surgeons in New York City—T. T. Sabine,[75] Edmund R. Peaslee,[76] and T. G. Thomas[77]—and from Trenholme of Montreal.[78] Several of these cases were patients with bleeding uterine leiomyoma, a condition which became, until the more general use of hysterectomy, one of the common and widely accepted indications for bilateral oöphorectomy.[79]

In 1877 James Marion Sims published his account of Battey's operation[80] in which he reviewed Battey's cases and presented seven of his own. Of his own series, one patient died, two became worse, and one of the other four improved. (Sims was forced to abandon the procedure in mid-operation for one patient). Despite these somewhat disastrous results, Sims championed the procedure, declaring that if he had removed both ovaries (other than in the one who died) and used the abdominal approach (rather than a transvaginal route in four women) in all these patients, the results would have been different. He concluded by recommending bilateral ovariotomy for a wide variety of indications similar to those of Battey.

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[70] Editorial, *Richmond and Louisville Med. J*, 1872, *14* 828-829

[71] J. T Gilmore, *op. cit* (n. 59 above), p. 175, and "Normal ovariotomy," *Atlanta Med & Surg. J*, 1874/5, *12*· 321-330

[72] D. W. Yandell and E McClellan, "Battey's operation," *Amer Practitioner (Louisville)*, 1875, *12* 200-214.

[73] D W. Yandell and E McClellan, "Battey's operation," *Atlanta Med & Surg J.*, 1875/6, *13:* 481-492

[74] *Ibid*, p 491.

[75] T. T Sabine, "Case of normal ovariotomy recovery," *New York Med. J.*, 1875, *21* 37-41.

[76] E. R Peaslee, "A case of solid uterus bipartitus; both ovaries removed for the relief of epileptic seizures, ascribed to ovarian irritation," *Trans. Amer Gynec Soc.*, 1876, *1* 340-353

[77] T G Thomas, "Obstetrics and gynecology," *Amer J Med Sci*, 1876, *72:* 133-170

[78] E H. Trenholme, *op. cit.* (n 7 above), p. 425

[79] S C Gordon, "Hysteria and its relation to diseases of the uterine appendages," *J A.M.A*, 1886, *6* 561-567

[80] R Battey, *op cit.* (n. 46 above), p. 793

Subsequently the operation was performed widely by urban as well as rural physicians,[81] not only for ovarian neuralgia and severe dysmenorrhea, but epilepsy, nymphomania, and insanity.[82] Both the Chicago Gynecological[83] and New York Obstetrical[84] Societies recorded cases and discussed their indications and merits. Social class distinctions may have had some bearing on the performance of the procedure. Apparently most of the patients were from the middle (and upper) class or institutionalized (see below). Some reports included glowing testimonials from patients to bolster recommendation of the procedure. For instance, one patient observed:

> No pen can write the sufferings I endured in the five years previous to my operation. At times I became almost desperate enough to take my life and end my sufferings. . . . My life now seems a new one, and I am getting along splendidly. . . . I am now a well, happy, and cheerful girl, and do not feel like the same person at all.[85]

In contrast, several reports sounded a more cautionary note. For instance, Engelmann, who had three patients die following the procedure,[86] noted the mortality rate of 30 to 33% of all cases reported and the fact that only another third seemed to be improved appreciably. Engelmann also took issue with Battey's argument that this procedure should be associated with little more risk than the spaying of domestic animals[87] (Hegar later espoused a similar view (see below)), stating that such a comparison was totally unjustified[88] because the operative conditions were less favorable than in cases of ovarian tumors and the small ovaries lay deep in the pelvis, perhaps buried in bowel or omentum, with a pedicle that was difficult to ligate. Amazingly, Engelmann concluded his reports by advocating the procedure, echoing Battey in concluding, "However great the dangers, I can but again repeat 'they are not out of proportion to the severity of the malady, and the magnitude of the results.' "[89]

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[81] E. P. Becton, *op. cit.* (n. 3 above), J. H. Carstens, *op cit.* (n. 5 above); C. Cushing, "What are the conditions that justify oophorectomy?" *Western Lancet, J. Med. & Surg (San Francisco),* 1883, *12* 97-105, R. A. Kitto, "Ovariotomy as a prophylaxis and cure for insanity," *J A.M.A.*, 1891, *16* 516-517, E. C. Mann, "Removal of both ovaries for hystero-epilepsy, without controlling the convulsions, rapid improvement under central galvanization followed by general faradization, nerve tonics, full feeding, and rest," *New York Med. J.*, 1881, *33:* 16-20.

[82] W. Goodell, "Clinical notes on the extirpation of the ovaries for insanity," *Med Soc State of Penn , Trans.*, 1881, *13.* 638-643

[83] A. R. Jackson, "Battey's operation. Discussion before The Chicago Gynaecological Society, September 17th, 1880," *Chicago Med. & Surg. Examiner,* 1880, *41:* 456-461.

[84] B. McE. Emmet, "Battey's operation," *New York Med. J.*, 1882, *36:* 283-284.

[85] J. T. Johnson, "Battey's operation," *Virginia Med Mthly ,* 1895/6, *22:* 1012-1033.

[86] G. J Engelmann, "Battey's operation; three fatal cases, with some remarks upon the indications for the operation," *Amer J. Obstet. & Dis Women & Child ,* 1878, *11:* 459-481, "The difficulties and dangers of Battey's operation," *Trans. Amer. Med. Assoc.*, 1878, *29:* 463-473.

As late as 1893, H. Marion-Sims reported that he had performed bilateral oöphorectomy for epilepsy[90] and in 1887 Howard A. Kelly reported that he had performed Battey's operation "many times with most happy results."[91] Other less renowned operators testified to similar success.[92] It probably never will be known how many patients underwent Battey's operation, as many reports mentioned large numbers of cases almost as an aside,[93] and undoubtedly many cases went unreported.

"Battey's operation" actually was performed first by Alfred Hegar of Germany three weeks prior to Battey's on 27 July 1872, in a patient with menstrual neuralgia. However, the patient died and Hegar waited until after five years and numerous other cases before reporting his results.[94] Hegar explicitly stated that by castration he hoped to suppress ovarian function and its influence on the body.[95] In an 1878 monograph Hegar recorded his series of cases and exhaustively reviewed the literature.[96] Although Hegar unquestionably led the continental surgeons in ovariotomy and other pelvic surgery, his colleagues were not far behind.[97] However, surgeons in France were slow to espouse "Batteyism."

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[87] R. Battey, *op cit.* (n. 23 above), p. 51

[88] G J. Engelmann, *op. cit.* (n. 86 above), p. 471.

[89] *Ibid*, p. 473

[90] H. Marion-Sims, "Hystero-epilepsy. Report of seven cases cured by surgical treatment," *Trans. Amer. Gynec. Soc* , 1893, *18*: 282-298.

[91] H. A. Kelly, "Discussion: "Battey's operation-its matured results" by Robert Battey," *Trans. Amer. Gynec. Soc.*, 1887, *12*: 272.

[92] Y. H. Bond, "Must the ovaries go?" *The Weekly Med Rev. (St Louis)*, 1887, *16* 62-69, P. F Mundé, "My experience with oophorectomy for the cure of hystero-epilepsy," *Amer J. Obstet. & Dis Women & Child.*, 1892, *25*: 454-460; J. T. Johnson, *op. cit* (n. 85 above).

[93] S. C Gordon, *op. cit* (n. 79 above), G. H. Rohé, "The relation of pelvic disease and psychical disturbances in women," *Amer. J. Obstet. & Dis. Women & Child.*, 1892, *26* 694-726; J. T. Johnson, *op. cit* (n 85 above)

[94] A. Hegar, "Ueber die Extirpation normaler und nicht zu umfänglichen Tumoren degenerirter Eierstoke. I. Die Bedputung des Eierstocks für den Organismus," *Cent. fur Gynak.*, 1877, *1*: 297-307.

[95] A. Hegar, "Castration in mental and nervous diseases. A symposium," *Amer. J Med. Sci.*, 1886, *92*: 471-483.

[96] A. Hegar, *op cit.* (n. 6 above).

In Great Britain, Alexander Russell Simpson, presumably influenced by Sims' report the year earlier, reported to the Edinburgh Medico-Chirurgical Society a case performed in 1878.[98] Unquestionably, other than Battey himself, the leading advocate of bilateral oöphorectomy was Robert Lawson Tait, surgeon to the Birmingham and Midland Hospital for Women. Tait first performed double ovariotomy to arrest the growth of a bleeding leiomyoma five days after Hegar and sixteen days before Battey performed theirs.[99] Again, however, only in response to Simpson's report did Tait recount this experience in a brief note. An ovariotomist of first rank, Tait's experience with Battey's operation has several points of interest. Initially, he reported that his first three cases died,[100] but later he reversed himself, stating that the first patient recovered and regained her health.[101] In his magnum opus, *Diseases of the Ovaries*,[102] he claimed priority for the procedure for himself;[103] then later he credits Battey as the originator of this procedure.[104] Strangely, he failed to mention his original operation in his Hastings Prize essay on ovarian disease (1873), which was a precursor to his 1883 work.[105] Tait reported numerous cases of the procedure and when Battey visited Manchester "demonstrated nine or ten (cases) of his own (Battey's) operation."[106] One of England's staunchest champions of ovariotomy, Tait was engaged in numerous controversies, both in the medical journals and public press, regarding the merits of ovariotomy.[107] In addition to numerous contributions to ovarian surgery, Tait developed the technique and espoused the removal of diseased uterine appendages, which, with the removal of the ovaries, became known as Tait's operation.

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[97] A Martin, "Ueber partielle Ovarien-und Tubenexstirpation," *Samml Klin Vortr. (Leipzig)*, 1889, *343 (Gynak 3):* 2481-2498.

[98] A R Simpson, "History of a case of double oophorectomy, or Battey's operation with remarks," *Brit Med. J*, 1879, *1:* 763-766.

[99] L. Tait, *op cit.* (n. 1 above). *Brit. Med. J*, 1879, *1* 813-814.

[100] *Ibid.*

[101] L. Tait, "Discussion: "Oophorectomy" by Thomas Savage," in, *Transactions of the International Medical Congress, Seventh Session* (London: J W. Kolckmann, 1881), vol. 4, p. 293.

[102] L. Tait, *The Pathology and Treatment of Diseases of the Ovaries (Being the Hastings Essay for 1873)*, 4th ed. (Birmingham: Cornish Brothers, 1883).

[103] *Ibid*, p. 107

[104] *Ibid*, p. 326.

[105] L. Tait, "The Hastings Prize Essay, 1873 The pathology and treatment of ovarian diseases," *Brit Med J.*, 1874, *1*· 701-703, 733-736, 765-768, 798-800, 825-827, and *2.* 8-10, 27-29.

[106] H. A. Kelly, "A diary of Robert Battey, M.D.," *Therap. Gazette*, 1921, *45*· 612-620.

[107] L. Tait, "Casey v. Imlach," *Lancet*, 1886, *2*· 375-376; " 'Spaying', or removal of the uterine appendages?" *Lancet*, 1886, *2.* 557; "Presidential address. On some pending questions in gynaecology," *Brit Med J*, 1887, *1* 145-148.

In light of this wave of enthusiasm it is appropriate to examine the factors that led to the "downfall" of Battey's operation. Despite Battey's enthusiasm for and advocacy of bilateral ovariotomy, he not infrequently sounded a cautionary note. On at least one occasion he admitted that the operation was being performed too frequently and that the indications had become too general.[108] At the International Medical Congress of 1886, he protested the operation's abuse and recorded that up to that date he had met with only fifteen cases in which he believed the procedure was justified.[109] Undoubtedly, to a great extent it was the flagrant abuse of the procedure and its performance for questionable indications that soon led to its loss of favor in the eyes of leading surgeons and the public. During the latter part of the 1870s and the 1880s an increasing number of reports advocated Battey's operation for "ovaralgia"[110] "hystero-epilepsy"[111] nymphomania[112] and moral insanity.[113] This is perhaps understandable when one realizes that many authorities both in America and abroad[114] regarded insanity as a result of pathology of the ovaries, or kidneys, or even of intestinal putrifaction.[115] In fact, William Goodell, professor of gynecology at the University of Pennsylvania, advocated Battey's operation for all cases of insanity,[116] and this indication quickly was espoused by others[117] including Battey himself.[118] Goodell wrote:

> If the operation be not followed by a cure, the surgeon can console himself with the thought that he has brought about a sterility in a woman who might otherwise have given birth to an insane progeny. In fact, I am not sure but that, in this progressive

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[108] R Battey, *op cit.* (n. 53 above).

[109] R. Battey, *op. cit* (n. 25 above).

[110] F. West, "History of a case of spaying for ovaralgia, accompanied by epileptiform convulsions," *Maryland Med J*, 1879/80, *6*· 315-317.

[111] E C Mann, *op cit* (n 81 above); J. G. Brooks, "Castration for hystero-epilepsy (Battey's operation)," *Med & Surg Reporter*, 1885, *52* 230-232.

[112] J G Brooks, *op. cit* (n. 111 above)

[113] W. B. Goldsmith, "A case of moral insanity," *Amer. J Insanity*, 1883, *40*. 162-177.

[114] R. Barnes, "On the correlations of the sexual functions and mental disorders of women," *Brit Gynaecol J (London)*, 1890/1, *6*. 390-406, C. E. L. Mayer, *Die Beziehungen der krankhaften Zustande und Vorgange in den Sexualorganen des Weibes zu Geistesstorungen* (Berlin: A. Hirschwald, 1869).

[115] G. H. Rohé, *op cit.* (n 93 above).

[116] W. Goodell, "A case of spaying for fibroid tumour of the womb," *Amer J Med. Sci.*, 1878, *76* 36-50; *Lessons in Gynecology* (Philadelphia: D G Brinton, 1879), pp. 267-288, *op. cit.* (n. 82 above).

[117] M A. Pallen, "Some suggestions with regard to the insanities of females," *Amer J. Obstet & Dis Women & Child.*, 1877, *10* 206-217, R. A. Kitto, *op cit.* (n. 81 above).

[118] E. D. Bondurant, "Two cases of oophorectomy for insanity," *J. Insanity*, 1886, *42* 342-345.

age, it may not in the future be deemed sound political economy to stamp out insanity by removing the ovaries of insane women.[119]

Goodell justified this approach by his belief that such a woman "is liable to transmit the taint of insanity to her children, and to her children's children for many generations."[120] As late as 1891 one writer[121] noted ". . . hundreds of unfortunate women are today languishing in insane asylums, who might be cured by [Battey's] operation." Enthusiasm for this approach reached such proportions that removal of both normal ovaries and ovarian tumors became regarded as a cure for insanity.[122] However, most advocates of such an approach presented little evidence for their thesis. Generally, the period of postoperative follow-up was only a few days or weeks[123] and the number of cases few.[124]

As might be expected, a reaction to indiscriminate castration caused Battey's operation to fall into disrepute. As early as 1874 the Medical Board of the Women's Hospital (New York) opposed Sims' performance of controversial procedures such as Battey's operation. In fact, this constituted part of the controversy that led to Sims' resignation from the Women's Hospital staff.[125] In 1879 Thomas Addis Emmet, in his textbook of gynecology,[126] criticized the procedure, noting that the mortality rate was high and the success rate had not exceeded 25%.[127] A few years later he expanded this view, stating that more harm than good had been done by Battey's operation and that the procedure was frightfully abused.[128] Emmet tempered these remarks by recommending that rather than totally abandoning the procedure, only a few experienced surgeons should perform it.[129] Regarding the operation, Thaddeus A. Reamy noted "a tendency, in certain quarters, to recklessness," cautioning that it would "do no harm to apply the breaks [sic] until the gentlemen have time to remember that the ovaries . . . should not needlessly be sacrificed."[130] He later observed that many a "sinless ovary" was being sacrificed because of the very brilliance and facility of the operation, and its comparative safety. Considering the "painful want of familiarity with its minor pathologic changes," he thought it "painfully suggestive of too much freedom with the ovary" to remove it when the disease could be cured by some less radical procedure. Although Reamy conceded that the operation might add years to female life, he warned that some day a statistician would compute the years of human life lost to the race by destruction of ovaries whose "structure yet bears many possibilities for population."[131]

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[119] W. Goodell, "Discussion: "Oophorectomy" by Thomas Savage," in, *Transactions of the International Medical Congress, Seventh Session* (London. J. W Kolckmann, 1881), vol 4, p. 295.

[120] W. Goodell, *op cit.* (n. 82 above), p. 639.

[121] R A Kitto, *op cit.* (n. 81 above).

[122] W. P. Manton, "A contribution to the history of ovariotomy on the insane," *Trans Amer. Assoc Obstet. Gynecol* , 1889, 2· 262-265; G H Rohé, *op cit* (n. 93 above); G. H. Rohé, "Further observations on the relation of pelvic disease and psychical disturbances in women," *Amer J Obstet & Dis Women & Child* , 1893, *28.* 423-425

[123] R A. Kitto, *op cit* (n. 81 above), J M. Baker, "Oophorectomy, or Battey's operation," *No. Carolina Med J* , 1883, *12* 61-65

[124] W Goodell, *op cit.* (n 82 above)

[125] S. Harris, *Woman's Surgeon The Life Story of J Marion Sims* (New York. Macmillan, 1950), p. 297.

[126] T. A. Emmet, *The Principles and Practice of Gynaecology* (Philadelphia. H. C. Lea, 1879).

[127] *Ibid,* p. 775.

[128] T. A. Emmet, "Discussion· "Four cases of oophorectomy, with remarks" by J. T. Johnson," *Trans Amer. Gynec Soc.,* 1885, *10* 135.

[129] *Ibid.*

Other writers took up the debate. Reports of the failure of Battey's operation appeared more frequently,[132] but so did successes.[133] Dr. Wharton Sinkler[134] reviewed the published reports and concluded that the opinions of different observers varied to such an extent that one might believe that totally different beings and conditions were being considered.

Probably the most important factor in the demise of Battey's operation was its almost wholesale use for the cure of convulsive disorders and insanity. From Catonsville, Maryland, George H. Rohé reported[135] that he had examined under anesthesia 35 females from a hospital population of about two hundred patients. He stated that he had found evidence of pelvic disease in 26 (74%) and removed the adnexa in 18 of these women. His indications for surgery included melancholia, "simple" mania, puerperal mania, hysterical mania, hystero-epilepsy with mania, and epilepsy. Shortly thereafter he attempted to justify this approach, noting that a "prominent attorney" had given the opinion that an insane person "having lucid intervals could give a valid consent to any operation during said interval, being at that time considered by the law as sane."[136]

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[130] T A. Reamy, "Discussion: "Four cases of oophorectomy, with remarks" by J. T Johnson," *Trans. Amer. Gynec. Soc.*, 1885, *10.* 140-141

[131] T A. Reamy, "The President's annual address," *Trans. Amer. Gynec. Soc.*, 1886, *11:* 41-59.

[132] Luilam, "Failure of the Battey-Tait operation to cure epilepsy," *Clinique*, 1891, *12*· 471-473; A. Church, "Removal of the ovaries and tubes in the insane and neurotic," *Amer. J. Obstet & Dis Women & Child* , 1893, *28* 491-498 and 569-573

[133] G H. Rohé, *op. cit* (n. 93 above, n. 122 above), J. Meyer, "A case of insanity, caused by diseased ovaries, cured by their removal—a phenomenal triumph for operative treatment," *Trans. Amer Assoc Obstet Gynec.*, 1894, *7.* 503-504.

[134] W Sinkler, "The remote results of removal of the tubes and ovaries." *Univ Med Mag (Philadelphia)*, 1891/2, *4.* 173-186.

[135] G. H. Rohé, *op. cit.* (n 93 above).

[136] G. H. Rohé, "Letter to the editor," *J A M.A* , 1893, *20.* 182-183.

Perhaps this approach to insanity reached its apogee when at the Norristown, Pennsylvania, State Hospital for the Insane, a separate annex ward was established for women undergoing bilateral oöphorectomy. Dr. Joseph Price of that institution, with consent of the hospital trustees, already had performed at least four such procedures, and had fifty more patients, "marked for operation" when the Committee on Lunacy of the Pennsylvania State Board of Public Charities investigated the institution. Their report[137] seems to have considered seriously for the first time the medico-legal aspect of oöphorectomy in institutionalized patients. The Committee declared:

> The zeal of the gynecologist is being carried to an unusual extent when it proposes to use a State Hospital for the Insane as an experimental station, where lunatic women are to be subjected to doubtful operations for supposed cures. If it is to be permitted in some forty or fifty cases, as proposed, it might be well to practice the experiment upon the entire female lunatic population, so that the gynecologist may have the large opportunity he doubtless craves to see just what would happen. At the expense of some lives, the continued and aggravated insanity of most of his subjects, with a few supposed cures and improvements, he could read his conclusions learnedly to his gynecological brethren, with the resultant added forward movement up his ladder of fame.[138]

The Committee concluded that the operation was "illegal, . . . experimental (in) character, . . . brutal and inhumane, and not excusable on any reasonable ground." Although proponents of Batteyism protested this report,[139] the pendulum was swinging away from "normal" ovariotomy.

An additional factor in the demise of Battey's operation was increasing opposition by some leading gynecologists. Sir (Thomas) Spencer Wells, one of England's greatest ovariotomists, who had performed Battey's operation himself[140] in 1865, in the preface to his *Diseases of the Ovaries,*[141] had forewarned the potential for abuse:

> A discovery which has triumphed over opposition of all kinds, honest and scientific, prejudiced and ignorant, may still be ruined by the support of rash, inconsistent, thoughtless partisans, whose failures do not reflect so much discredit on themselves as on the operation they have badly performed in unsuitable cases. Indications are

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[137] Editorial, "Removal of the ovaries as a therapeutic measure in public institutions for the insane," *J A.M A.*, 1893, *20* 135-137.

[138] *Ibid*

[139] G. H Rohé, *op cit.* (n. 136 above), H B. Young, "Letter to the editor," *J A.M A.*, 1893, *20* 258

[140] T S. Wells, "Case of removal of both ovaries for dysmenorrhea (Battey's operation)," *Trans Amer. Gynec. Soc.*, 1879, *4* 198-220.

[141] T S. Wells, *Diseases of the Ovaries*, 2 volumes (London: J. Churchill, 1865/72).

> not wanting that ovariotomy has entered on this phase of progress, and there is reason to fear that judicious men may be influenced by the outcry of the foolish, and that a triumph of British surgery, which has been won by such great labor and care, may be arrested before it is complete—may even be converted into temporary defeat—by the indiscriminate support of zealous but injudicious advocates.

Later, Wells explicitly stated that the procedure should not be performed for nymphomania, insanity, or any other form of mental disease, noting that

> in many instances of supposed mental instability due to ovarian disease the patients undergo spontaneous cure, and . . . it cannot be determined to what extent the relief reported results from the removal of the ovaries and how much is psychical phenomenon . . . . gynecologists will never empty the lunatic asylums.[142]

Other gynecologists argued[143] that even if the ovaries were diseased many small ovarian cysts could be treated by simple puncture rather than oöphorectomy. John Whitridge Williams[144] of the newly founded Johns Hopkins Hospital recounted his pathologic findings over three or four years during which he examined the more then 300 ovaries of nearly all the operative specimens. Williams recalled that in most cases the pathologic findings failed to justify the procedure. Other pathologic studies supported this conclusion.[145] Subsequently, only occasional case reports advocated the removal of relatively normal ovaries,[146] while most reports emphasized the futility of the procedure.[147] Howard A. Kelly in 1896, the year of Battey's death, expanded his essay on ovarian conservatism of a few years earlier,[148] and by the end of the century many textbooks, including Kelly's *Operative Gynecology*[149] did not even mention Battey's operation. During the first decade of the nineteenth century leading gynecologists preached conservatism in surgery. In recalling the previous years J. Thomas Kelly[150] observed:

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[142] T. S Wells, "Castration in mental and nervous diseases. A symposium," *Amer J Med. Sci* , 1886, *92* 455-471.

[143] W M Polk, "Operations upon the uterine appendages with a view to preserving the functions of ovulation and menstruation," *Trans Amer. Gynec Soc* , 1893, *18*· 175-199

[144] J. W. Williams, "Discussion: "Operations upon the uterine appendages with a view to preserving the functions of ovulation and menstruation" by W. M Polk," *Trans Amer. Gynec. Soc* , 1893, *18*· 192.

[145] H. C Coe, "Diseases of the ovaries," in, *A System of Gynecology, by American Authors,* M. D Mann, ed., (Philadelphia. Lea Brothers and Company, 1888), vol. II, pp 850-891

[146] J Meyer, *op cit.* (n. 133 above).

[147] A. Church, *op cit* (n. 132 above); R. T Edes, "Ovariotomy for nervous disease," *Boston Med & Surg. J* , 1894, *130*. 105-107; W S. Playfair, "Remarks on the systematic treatment of aggravated hysteria and certain allied forms of neurasthenic disease," *Brit. Med. J.*, 1882, *2:* 309-312; N. Barnesby, *op cit* (n. 9 above)

[148] H. A Kelly, "Conservatism in ovariotomy," *J.A M.A.*, 1896, *26*· 249-251, and "The ethical side of the operation of oophorectomy," *Amer. J. Obstet & Dis. Women & Child.*, 1893, *27* 206-208.

[149] H A. Kelly, *Operative Gynecology*, 2 volumes (New York: D Appleton and Company, 1898).

> one might see in almost any hospital numbers of normal organs sacrificed . . . so rabid were gynecologists to do surgery that there was nearly a wholesale wiping out of gynecological therapeutics.

Emil Novak, in a thoughtful essay on "The Hormone Theory"[151] attempted to put ovariotomy in perspective and weigh the relative merits of the new conservatism. He wrote:

> The time has passed when healthy ovaries were ruthlessly sacrificed to cure dysmenorrhea, obscure pelvic pains, etc. It is true, of course, that the saner and more conservative methods of the modern gynecologist were literally forced upon him by a realization of the futility of the irrational and mutilating measures of former days, as well as by the awakening of the surgical world to the fact that it is only rarely in accordance with the principles of true surgery to remove tissue which is not the seat of disease, especially when such tissue can be shown to possess a definite and useful function. A restraining influence of no little importance has therefore been imposed upon us by the knowledge that the ovary, in addition to its well known function of ovulation, plays another more subtle role in the processes of the woman's body. At the same time, it is only fair to present the other side of the picture also. . . . (it has been) shown that however important the hormones of the female generative organs may be, they are not by any means indispensable to life, or even usually to comparative comfort, and hence, from this standpoint there would seem to be no physiological basis for such ultraconservative operative measures as some would advise . . . . it would seem that radical conservatism, as it has been called, is scarcely less commendable than that unreasoning radicalism, pure and simple, which will not brook the restraint that knowledge and reason would impose.

A final consideration is the historical significance of Battey's operation and the extent of its contribution to the development of surgery and to the emerging science of endocrinology. Coincident with and following the publication of papers by Battey on ovarian surgery and by Robert Lawson Tait on tubal and ovarian operations, surgeons became more courageous in attempting pelvic surgery for various indications. Numerous writers maintained that Battey's operation contributed not only to an understanding of diseases of the female genital tract and the advancement of pelvic surgery, but to a popularization of laparotomy and abdominal surgery in general. Battey's name has been linked with that of Hegar and Tait as one who developed the whole field of pelvic operations for conditions other than gross ovarian or uterine pathology.[152] Following Battey's death (8 November 1895), an era of surgical conservatism ensued, with preservation of normal ovaries. We now are in an era of renewed advocacy of the removal of normal ovaries, especially near or after the menopause, as a prophylaxis for ovarian cancer, . . . it has been recognized that the ovaries elaborate little estrogen after the menopause. It is of interest that in an almost prophetic note Battey asked " . . . whether (in cases of hysterectomy) the extirpation of the ovaries ought not to form a normal part of the operative procedure."

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[150] J. T Kelly, Jr , "How far is the so-called conservative pelvic surgery conservative," *Amer. J. Obstet & Dis. Women & Child.*, 1909, *60*· 94-100 and 145.

[151] E. Novak, "The hormone theory and the female generative organs," *Surg. Gynec Obstet.*, 1909, *9*· 344-350.

The related problem concerns an understanding of the ovaries' role in menstruation. Strangely, perhaps this was not firmly established until the late nineteenth century. Although the ovaries were conceded to influence the body through the medium of the sympathetic nerves, knowledge was so sparse that in 1885 as eminent a gynecologist as Emmet, in objecting to Battey's operation, suggested that dysmenorrhea had no relation to the ovaries.[153] At the same time another leading surgeon stated that if gynecologists wished "to have a clear idea of the true physiological position of the uterus, we must emancipate it from the thraldom of the ovary, in whose firm grasp for the last fifty years it has been secretly held."[154] While many individuals subscribed to the ovarian theory of menstruation,[155] others, including Lawson Tait,[156] held that this physiologic function lay under control of the fallopian tubes, the ganglion of nerves alongside the uterus,[157] or even the uterus per se.[158] As late as 1891 T. A. Reamy, president of the American Gynecological Society, observed with naïve surprise that in his experiences with 144 cases of bilateral removal of the ovaries[159] menstruation ceased within six months in every instance.

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[152] M. D Mann, "The early days of ovariotomy," *Buffalo Med. J.*, 1904, *n.s 13*· 510, Anonymous, "Robert Battey, M.D.," *Southern Surg. & Gynec Assoc. Trans.*, 1902, *15.* 415-417, J L. Baer, "A century of obstetrics and gynecology," *Illinois Med. J* , 1940, *77:* 468-470, R S. Sutton. "A brief review of the growth of McDowell's operation done at Danville, Kentucky, in 1809, its present status," *J.A M.A.*, 1885, *4:* 563

[153] T A Emmet, *op. cit.* (n. 128 above).

[154] A W Johnstone, "The infantile uterus," *Trans. Amer. Gynec. Soc.*, 1887, *12.* 275-285.

[155] R. Battey, *op cit* (n 27 above), p. 40.

[156] L Tait, *Diseases of Women and Abdominal Surgery*, vol. 1 (Leicester: Richardson and Company, 1889).

[157] A. W Johnstone, *op cit.* (n 154 above)

[158] J T. Gilmore, *op. cit.* (n. 71 above), p. 323, C Rauschenberg, "Ovulation and menstruation and Dr R. Battey's operation of normal ovariotomy," *Atlanta Med & Surg. J* , 1875/6, *13.* 713-727; A. R. Jackson, "The ovulation theory of menstruation. will it stand?" *Amer. J. Obstet. & Dis Women & Child.*, 1876, *9*· 529-560.

[159] T. A. Reamy, "Some clinical testimony as to the ultimate results from the removal of the uterine appendages," *Trans Amer Gynec. Soc.*, 1891, *16*· 230-247

Thus, perhaps one of the most important contributions of Battey's operation was indirect, in that it helped establish the realization that development of the genital organs and of secondary sexual characteristics and menstruation depends on functioning ovarian tissue. In his reports Battey repeatedly stressed that the rationale and purpose of his operation was to "arrest ovulation and produce the change of life." He confessed that he could not explain why the menses stopped, but by reasonably careful analysis of his cases he demonstrated that indeed menstruation did cease following bilateral ovariotomy, and re-emphasized that his procedure had as its goal production of the menopause. Additionally, both Battey[160] and Hegar[161] demonstrated the dependence of large vascular uterine leiomyomata on ovarian function by their decrease in size and sloughing following ovariotomy. One of Battey's admirers remarked: "It was Battey who invaded the hidden recesses of the female organism and snatched from its appointed place those delicate little glandular bodies whose mysterious and wonderful functions are of such high interest to the human race."[162] Fielding Garrison[163] credited Battey with "the first experiment in physiological surgery upon human beings . . . ," and noted its significance in connection with the development of ideas on internal secretions.

In conclusion, Battey's operation serves as an example of changing fashions in the practice of clinical medicine. The procedure represents a paradox of sorts because its major contributions occurred incidentally to its purported objective. For instance, it unquestionably served as an important factor in the development of abdominal surgery in general, and pelvic surgery in particular. In addition, "Battey's experiment" played an important role in the evolution of the concept of the relation of ovarian function to menstruation. However, these achievements were somewhat serendipitous or accidental by-products of the procedure. On the other hand, the enthusiastic manner in which Battey's operation was received by leading gynecologic surgeons and a large fraction of the profession illustrates the Achilles' heel of medicine: its too frequent and ready espousal of untested procedures or unproved theories. Yet, to relegate Battey's operation to the dust bin of passé procedures would be a mistake, for it unquestionably

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[160] R Battey, Discussion· "An experience with sloughing intrauterine fibroids" by Ely Van De Warker, *Trans. Amer Gynec. Soc* , 1889, *14* 165-167.

[161] A. Hegar, *op. cit* (n. 6 above)

[162] E. P. Becton, *op cit.* (n 3 above), p. 34.

[163] F. H. Garrison, *An Introduction to the History of Medicine with Medical Chronology, Suggestions for Study and Bibliographic Data*, 4th ed. (Philadelphia: W. B. Saunders Company, 1929), p. 695

constitutes an important segment of the evolution of surgery and understanding of ovarian physiology. However, the extent to which it actually contributed to the physical, mental, and emotional well being of the women on whom it was performed is difficult to evaluate. In fact, this remains as a problem for future solution.

GALEN: PHYSICIAN AS PHILOSOPHER
MAIMONIDES: PHILOSOPHER AS PHYSICIAN

ELINOR LIEBER

Maimonides is renowned as a philosopher but he also practised medicine, and in his last years he wrote exclusively on medical topics. In the mediaeval Islamic world it was common for a scholar—Muslim, Jewish or Christian—to earn his living as a medical practitioner at some stage of his career. Yet, to the end of his life Maimonides displayed an ambivalent attitude towards the practice of medicine; an attitude which is difficult to understand unless one considers the relationship of Maimonides the philosopher to Maimonides the physician.

Early in his life Maimonides showed an aptitude for religious studies, law and philosophy, and he had made his reputation in all these fields when he finally took up medicine as a career. His theological concepts were, of course, based on the Bible and the Talmud. However, as far as secular matters were concerned, Aristotle and Galen were his main authorities. Aristotle was to him "the chief of the philosophers,"[1] and in his last years he still maintained that the ideas of Aristotle "represent the perfection of the ideas of men, apart from those [men] who have received divine inspiration."[2]

In his medical writings Maimonides based himself almost entirely on the works of Galen and, through them, on the ideas expressed in the Hippocratic Corpus, and he freely acknowledged this fact.[3] With regard to medicine, he claimed that Galen "is the chief of this science and has to be followed in it," and he even conceded that some of Galen's discoveries "are doubtlessly, to

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[1] Moses Maimonides, *The Guide of the Perplexed,* I 5, 16b, transl. S. M Pines (Chicago University of Chicago Press, 1963), p 29. All quotations from the works of Maimonides have been newly translated from the cited texts for this paper, except for quotations from the above work and the passages referred to in ns. 31 and 47.

[2] Maimonides, Letter to Samuel ibn Tibbon, Hebrew text in A. Marx, "Texts by and about Maimonides," *Jewish Quart Rev.*, n s , 1935, *25* 371-428.

[3] See, for example, his Introduction to his *Aphorisms*· Moses Maimonides' Aphorismen (Fusūl), Einleitung (Arabic text and translation), reprinted in: Paul Kahle, *Opera Minora* (Leiden· Brill, 1956), pp. 157-166; and his Introduction to his *Commentary on the Aphorisms of Hippocrates,* in: M. Steinschneider, "Die Vorrede des Maimonides zu seinem Commentar uber die Aphorismen des Hippokrates" (Arabic text and translation), *Ztschr. d deutsch morgenland Gesellsch* , 1894, *48*· 218-234.

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be impartial, more correct than what Aristotle discusses in his books."[4] Yet, as will be seen, Maimonides entirely repudiates Galen's right to call himself a philosopher, or even to discuss philosophical matters, despite the fact that Galen was extremely interested in philosophy and had written a number of books on various aspects of the subject.

Galen, a pagan Greek, was born about the year 129 A.D. in Asia Minor, but practised medicine mainly in Rome. Maimonides was born, just over a thousand years later, to a Jewish family in Spain, but he made his career in Cairo. Yet, both were heirs of the Greek tradition in philosophy and medicine, and of the teachings of Aristotle in particular. Aristotle's ideas were influenced by the society in which he lived—one inherently composed of citizens and of slaves who toiled for them. In such a society the citizen ideally was not expected to earn his living (according to Aristotle, all paid work was degrading)[5] and the freeman thus received the liberal education of a philosopher who stood apart from such matters. In fact, however, participation in the higher forms of trade and banking was condoned, since the participant was not paid by an employer but risked his own money.[6]

It will be seen that Maimonides was far more influenced than Galen by this doctrine which implied that the true philosopher would not adopt the practice of medicine as a career. The root of the conflicting attitudes which Maimonides displays towards Galen is to be found in the fact that these two great physicians held entirely different views on the relationship of philosophy to medicine.

In the world of Plato and Aristotle, Hippocrates and the physicians of his school formed the prototype of the *architektonos iatros*. This was the superior type of medical practitioner, who resembled the Greek architect insofar as he possessed a knowledge of all aspects of his art yet specialised in none. The average doctor, on the other hand, was no more than a *demiurgos*, an artisan who served the public,[7] like a carpenter or weaver. As a freeman, the doctor was usually well educated and had also undergone a period of training with an experienced physician.[8] Yet, the extent to which he actually made use of books or writing in his profession depended solely on the degree to which he, or his teacher, considered a knowledge of medical theory to be essential for medical practice.[9] Moreover, the practice of medicine was to some extent in the hands of slave "doctors" who, according to Plato, should rightly have been called the "assistants" of the true doctors. Although they received little or no medical training,[10] they often attended patients in place of the physicians, usually with the concurrence of the latter. They tended to use rough-and-ready methods of treatment, which were in marked contrast to the generally refined manner of the true doctors.[11]

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[4] Moses Maimonides, *Aphorisms*, Discourse 25. Arabic text and translation of this Discourse: J. Schacht and M. Meyerhof, "Maimonides against Galen on philosophy and cosmogony," *Bull. Faculty of Arts, Cairo University*, 1939, *5*: 53-88

[5] Aristotle, *Politics*, 1337b, VIII 2.

[6] G Glotz, *Ancient Greece at Work*, transl. M. R Dobie (London: Kegan Paul, 1926), p. 160.

[7] Aristotle, *Politics*, 1282a, III 11, W. Jaeger, *Paideia*, transl. G. Highet (Oxford: Blackwell, 1945), vol. 3, p. 11. In ancient Greece the true physician did not specialise. He made the diagnosis and prescribed the treatment, which was often administered by "paramedical" craftsmen such as phlebotomists, or even musicians. For a similar situation in the mediaeval Islamic world see. A. Z. Iskander, "An attempted reconstruction of the late Alexandrian medical curriculum," *Med. Hist.*, 1976, *20*: 235-258, and A. Shiloah, "Ibn Hindū, le médecin et la musique," *Israel Oriental Studies*, 1972, *2* 447-462.

Thus, it is no wonder that in ancient Greece all practitioners of medicine tended to become tarred with the same brush. Even the best physician was classified socially as a businessman,[12] with a social status far below that of the philosopher. At the same time, however, many philosophers took an interest in medical matters, believing, like Aristotle, that the investigation of natural phenomena involved the study of medicine: "It behoves the physical philosopher to obtain also a clear view of the first principles of health and disease, inasmuch as neither health nor diseases can exist in lifeless things. Indeed we may say of most physical inquirers . . . that . . . [they] complete their works with a disquisition on medicine."[13]

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[8] See Plato, *Meno* 90 and *Protagoras* 311B.

[9] Even the authors of the Hippocratic Corpus present divergent views on the need for theoretical study (compare *Breaths* I with *On Ancient Medicine* XX) a divergence which was reflected for centuries in the teachings of the different medical sects

[10] See C. A. Forbes, "The education and training of slaves," *Trans. Amer Philol. Assn* , 1955, *86* 321-360.

[11] The description of the slave "doctors" or "doctors' assistants" is taken from Plato's *Laws* 720 A-E and *Politicus* 296 C. The question whether two kinds of medical practitioners existed in reality has been much debated and cannot be fully discussed here However, the view expressed above, that Plato's picture is realistic, agrees with that of R. Joly ("Esclaves et médecins dans la Grèce antique," *Sudhoff's Arch* , 1969, *53.* 1-14) who reasonably maintains that Plato would not otherwise have used it as an analogy in a dialogue dealing with quite a different topic. The main argument used against this view is that the Hippocratic *Epidemics* clearly indicate that the Hippocratic doctors treated slaves as well as freemen, and with equal care. However, Joly (*ibid*) has tried to show that the proportion of slaves among the patients mentioned in the *Epidemics* is relatively low. In any case it is obvious that a Hippocratic physician only treated a slave if and when he was sent for by the master of the slave. Moreover, despite the peripatetic habits of the Hippocratic physicians at least, it is difficult to believe that the number of "true" doctors was sufficient for the population, free or slave, particularly in the rural areas.

The existence of two types of medical practitioner in ancient Greece is easier to acknowledge if it be realized that, due to the shortage of qualified physicians, "medical assistants" (not to be confused with practitioners of indigenous medicine) have been officially incorporated into the modern systems of medical care which are now being established in developing countries. Of these the Chinese "barefoot doctors" are a typical and well-publicised example. Moreover, the best-documented analog is probably that of the Russian civilian feldsher, who came into being in a serf economy and still plays an essential and recognised part in the state medical services of the U S S.R See S. Ramer, "Who was the Russian feldsher?" *Bull. Hist. Med.*, 1976, *50* 213-225. Ramer notes that although the feldshers are officially "physicians' assistants," in many cases they are totally independent practitioners, particularly in the rural areas where they greatly outnumber the physicians. As a result they tend to abuse their role in a manner described by M G Field (*Doctor and Patient in Soviet Russia* [Cambridge· Harvard University Press, 1957], pp 97-101 and 132-133), which recalls Plato's description of the behaviour of the "doctors' assistants," both slave and free

[12] L. Edelstein, "The Hippocratic physician" (1931). Reprinted in *Ancient Medicine*, ed. O. and C. L. Temkin (Baltimore: Johns Hopkins Press, 1967), p. 87.

Here Aristotle is speaking of the *physikos*, the natural philosopher who had no intention of taking up medicine as a career, so that his attitude towards his medical studies was entirely different from that of the future physician. As a philosopher his contact, if any, with patients was scientific rather than professional. Galen similarly suggests that a man could be called a *physikos* if he possessed a knowledge of nature, but this would not be enough for him to be called a physician.[14] By Galen's time, however, the scholastic movement was well on the way to its acme in the Middle Ages. Medical texts were studied in a purely abstract fashion and medical theories were advanced by reasoning from what had been heard or read, rather than from actual observation of the living or the dead.

Yet while the classical philosophers studied man as part of the universe, the Hippocratic author of *Airs, Waters, Places* declares throughout the work that the universe must be studied in order to understand man. There had always existed a small minority of educated practitioners who were intellectually capable of becoming "philosophers" but felt called to the profession of healing the sick. Among them were Hippocrates and the members of his school and Galen, their greatest disciple. For many of them medicine constituted their means of livelihood, though not for Galen who was the son of a well-to-do architect and landowner. Galen writes of himself:

> I was brought up by a father who, versed in the arithmetical, logical and grammatical sciences, taught me these, as well as the other subjects of education. Then, when I was in my fifteenth year, he began to interest me in dialectic theory, his idea being that I should give my attention to philosophy alone; then, however, when I was in my seventeenth year, he was impelled by vivid dreams to make me engage in medicine as well as philosophy.[15]

Henceforth, the young man was dedicated to the practice of medicine and he prepared himself heart and soul to be a doctor. However, unlike most other practitioners of his day, he also studied philosophy. He practised medicine most successfully throughout his life, becoming physician to the Emperor Marcus Aurelius, and he still found time for writing numerous treatises, both medical and philosophical,[16] particularly in the second half of his life.[17]

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[13] Aristotle, *De sensu*, 436a-b, Ch I *The Works of Aristotle in English*, ed W. D Ross, Vol. 3, 1931, *Parva naturalia*, trans J I. Beare (Oxford: Clarendon Press, 1908).

[14] See V. Nutton, "The Medical School of Velia," *La Parola del Passato*, 1970, fasc 130-133, 211-225.

[15] Galen, *De ordine librorum*, Kuhn XIX, 59 Translation taken from *Greek Medicine*, ed. A J. Brock (London: Dent, 1929), p. 180.

Galen, however, was a rare bird in his time and he was fully aware of the fact. According to his writings he set himself extremely high standards and expected the same of others: "Since my youth I have studied logic. Then, when I started to study medicine, I renounced pleasure and disregarded worldly matters. . . . I tried to give my whole time to the practice of medicine and to reflecting and meditating on it. . . . He who can say that he has done as I did . . . may embrace that great science."[18] Despite his philosophical education and leanings, his first allegiance was to medical practice.[19]

In Rome a doctor, and a Greek doctor in particular, could gain great wealth, even if he could not enjoy all the privileges of the state.[20] But the Roman doctor greedy for money, who had long since been censured by Pliny,[21] was no ideal of Galen's, and the tradition of honor for the philosopher rather than the physician must have weighed on his mind. For he, himself, rightly claimed to be something more than the ordinary type of doctor. He obviously considered himself to be an *aristos iatros,* that superior type of practitioner which he likens to an idealised Hippocrates in his tract, *That the Best Physician is also a Philosopher.*[22] Here Galen complains bitterly of the lack of knowledge and low ethical standards of those of his colleagues who, then as now, were only concerned with enriching themselves. He insists that it is not possible for a doctor "to make money and at the same time to practise the immense art (of medicine); of necessity he will despise the one, the more eagerly he hastens towards the other."[23] The best doctor, on the other hand, is one who applies the different aspects of philosophy. He cultivates logic and science, and practises ethics not only in his profession but also in his private life. In this way, Galen continues, "he will have mastered all the divisions of philosophy: logic, science and ethics."

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[16] On Galen as a philosopher see V Nutton, "Galen and medical autobiography," *Proc Cambridge Philol. Soc.*, 1972, No. 198 (n.s. No. 18). 50-62.

[17] For recent works on Galen's life and thought in general see V Nutton, "The chronology of Galen's early career," *Class Quart* , 1973, *23*. 158-171; O. Temkin, *Galenism* (Ithaca, N.Y. Cornell University Press, 1973); L. Garcia Ballester, *Galeno* (Madrid: Guadarrama, 1972)—to be read together with C. J. Post and J Scarborough, "On Ballester's Galen," *Episteme*, 1975, *9*: 3-31; and V. Nutton, *Galen* (Cambridge Cambridge University Press, forthcoming). See also the bibliographies in K. Schubring, *Bemerkungen und bibliographische Hinweise zu Galen* (Hildesheim: Olms, 1965), and V. Nutton, *Karl Gottlob Kuhn and His Edition of the Works of Galen* (Oxford: Microform Publ., 1976)

[18] Galen, *The Examination of the Good Physician*, which is extant only in an Arabic translation, hitherto unpublished. A few passages in English are to be found in A. Z Iskander, "Galen and Rhazes on examining physicians," *Bull. Hist Med* , 1962, *36* 362-365, but not the fragment quoted here which comes from '*Uyūn al-anbā' fī tabaqāt al-atibbā' (Sources of Information on the Classes of Physicians)*, by Ibn Abī Uṣaybiʿa (Beirut Dār Maktabat al-Hayāt, 1965), p. 121. A somewhat free translation of this passage is found in M. Meyerhof, "Autobiographische Bruchstucke Galens aus arabischen Quellen," *Arch. f Gesch d Med* , 1929, *22*. 72-86.

[19] The opposite conclusion has been drawn by O. Temkin in *Galenism* (see n. 17 above), p. 47. Quoting a passage from *De sanitate tuenda* 5.1, in which Galen mentions that he stayed awake at nights, "sometimes for the sake of the sick but always for the beauty of study," Temkin suggests that Galen meant by this that "study was closer to his heart than medical practice." However, when the quotation is considered in its context, it would seem that Galen's intention here is merely to stress the fact that he remained in good health despite the fact that he stayed awake at night so much. Presumably he studied at night mainly because he was so busy practising medicine during the day He states that he enjoyed this study, which was not always concerned with the problems of his patients, but says nothing about preferring it to medical practice.

[20] V. Nutton, "The doctor and the oracle," *Revue belge de philologie et d'histoire*, 1969, *47*. 37-48.

[21] Pliny, *Natural History*, XXIX, viii, 21.

It would seem at first sight that Galen's sole intention in this treatise is to exhort his colleagues (somewhat hopelessly) to adopt the virtues of the post-Platonic philosophers; attributes which were in fact prescribed for the practitioner in the later Hippocratic writings. But Galen does appear to have a further aim in mind. He almost immediately reverses the argument to maintain: "And if philosophy is necessary for the physician, it is clear that he who is the [best] physician is certainly also a philosopher."[24]

Despite Galen's well-known tendency to prolixity, it is difficult to believe that he is merely propounding the same argument in an inverted form; one must assume that he is making a fresh point. His intention now is to stress his conclusion that the "best" type of doctor is *ipso facto* a philosopher. And in fact Galen himself admits, towards the end of the work, that this point of view was not universally accepted, and that there were those who considered that temperance and a disdain for money were the sign of the true physician, but not of the philosopher.[25]

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[22] Galen, *Quod optimus medicus sit quoque philosophus, Scripta Minora,* II, 1-8; Kuhn I, 53-63; E. Wenkebach, "Der hippokratische Arzt als das Ideal Galens," *Quellen und Studien zur Geschichte der Naturwissenschaft und der Medizin,* 1935, *3* 155-175. Galen's ideas on both good and bad doctors are scattered throughout his works. Unlike many of his other opinions they do not appear to have altered in the course of time. They are epitomised in this tract to which the argument will be restricted for the sake of brevity.

[23] *Ibid., S.M.* II, 4; Kühn I, 57.

[24] *Ibid., S.M.* II, 7, Kuhn I, 60-61. The tripartite division of philosophy is attributed by Sextus Empiricus (*Against logicians,* I, 16-18) to Plato, and above all to his pupil Xenocrates, and then to the Peripatetics and Stoics.

[25] *Ibid., S.M.* II, 8, Kuhn I, 62.

Why, then, did Galen ignore the ancient philosophical distinction between the philosopher and the medical practitioner, to claim so passionately that the "best" practitioner was a philosopher? It would seem likely that he was thereby hoping to improve the social "image" of these members of the profession. Certainly, a similar interpretation was in the mind of Abu-l-Farağ ibn Hindū (d. 1019 or 1029 A.D.), the Persian philosopher, physician and poet, when he noted with disapproval that Galen, "desiring to render medicine more important, makes a philosopher of the physician."[26]

Maimonides as a practitioner would obviously have fitted into Galen's "best" category of physicians. Yet, as will be seen, he, like Ibn Hindū, would never have agreed that such a status was sufficient to designate him a philosopher. From an early age he had studied to become both a man of religion and a philosopher in the Aristotelian sense of the term. His secular studies were very similar to those of Galen. Of this part of his education he was to write, late in his life: "It is necessary for whoever wishes to achieve human perfection to train himself at first in the art of logic, then in the mathematical sciences according to the proper order, then in the natural sciences, and after that in the divine science (metaphysics)."[27] He then qualified this statement, however, by claiming that the philosopher, unlike the physician, is born and not made. Not everyone is temperamentally suited to be a philosopher and an inadequacy of this kind cannot be overcome by training:

> Perfection can never be achieved in such people. And to make an effort for their benefit in this matter is pure ignorance on the part of him who makes the effort. For this science ("divine science"), as you know, is not like the science of medicine, or the science of geometry, and not every one has the disposition required for it.[28]

Maimonides was born in Cordova in 1135 A.D.[29] Like Galen he came from an educated and well-to-do family, his father being a judge of the Jewish religious courts. During most of the first half of his life, the family were fugitives from the religious oppression of the fanatic Almohad rulers. They fled to North Africa, and around 1167[30] Maimonides finally settled in Cairo where he was to spend the rest of his life. Despite these difficulties and the fact that his father died shortly after the family arrived in Egypt, he seems to have continued his studies throughout this period. The income needed to support himself and his family was assured as a partner (probably a sleeping-partner) in the business of his brother David, a dealer in precious stones. However, in 1169 or 1170 David was drowned on a trading-voyage. In a letter written while he was on his way, David states that the journey was undertaken "out of my continuous efforts for your [pl.] material well-being, although you [sing.] have never imposed upon me anything of the kind."[31] Many years later Maimonides himself confirmed that his beloved brother had been the source of his support:

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[26] A. Shiloah, "Ibn Hindū" (see n. 7 above).

[27] Maimonides, *Guide* (see n 1 above), I 34, 39b, p. 75.

[28] *Ibid* , I 34, 40 a-b, p. 76

[29] Few details are known about the life of Maimonides and almost every date proposed has been challenged This is one of the reasons why no satisfactory account of his life or work has yet appeared For the beginner at least, probably the best general account in English is *Maimonides* by D. Yellin and I Abrahams, in the third edition revised by J. I. Dienstag with a bibliography (New York: Hermon Press, 1972).

[30] For the justification of this and the following two dates, see S. D Goitein, *Letters of Mediaeval Jewish Traders* (Princeton. Princeton University Press, 1973), p. 208.

> And this last great misfortune which is the worst thing that has ever happened to me in my life, is the death of the virtuous one, of blessed memory, who drowned in the Indian Ocean. With him was much money of mine, of his own and of others. He left with me a little daughter and a widow. . . . Some eight years have now gone by and I am still in mourning and cannot be consoled. And how should I console myself? He grew up on my knees and he was my brother, he was my pupil; and he traded in the market and earned, and I could sit safely at home.[32]

The Greek tradition of despising paid labour was perpetuated to some extent in the mediaeval Islamic world. However, like the Greeks, both Jews and Muslims considered long-distance trading to be a perfectly respectable occupation. Thus it was adopted by the most eminent scholars and religious men, without affecting their social standing.[33] Still it is clear from these letters that Maimonides himself was never expected to make the long and dangerous voyages which were essential for this kind of trade. He had remained entirely free to lead the life of a scholar and philosopher in the Aristotelian manner. This happy period was now over and Maimonides was left to support the bereaved family, as well as his own.

A partial biography of Maimonides exists in the *Ta'rīkh al-Ḥukamā'*, a biographical dictionary of physicians and other learned men, which was compiled between the years 1230 and 1235 A.D. by Ibn al-Qiftī, an Egyptian Muslim physician. It is probably based to some extent on contemporary recollections of Maimonides, since Ibn al-Qifṭī was a close friend of Joseph ibn Yahya ibn Shim‘ ōn, a pupil of Maimonides, who is almost certainly identical with the Joseph ben Yehuḏa to whom Maimonides dedicated his *Guide of the Perplexed.*[34] The *Ta'rīkh* is one of the few sources which so much as mentions the activities of Maimonides during the first few years after his arrival in Cairo. Unfortunately, there are many obscurities in the text of his biography, as throughout the work, probably due to the fact that the only extant manuscript is an abridgement by another hand, which appeared soon after Ibn al-Qifṭī's death.

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[31] *Ibid.*, p 211.

[32] Letter to R. Marna Yefet bar Marna, in *Responsa and Letters of Maimonides* (in Hebrew), ed A. A L. Lichtenberg (Leipzig, 1859), Pt.2, 37v

[33] A. E. Lieber, "Eastern business practices and mediaeval European commerce," *Econ Hist Rev* , ser. 2, 1968, *21:* 230-243.

According to this version: "Maimonides made his living by trade in jewels and similar things and people studied the sciences of the ancients under him. This was in the last days of the Fāṭimid dynasty."[35] Officially the dynasty ended and the Ayyūbid succession began in 1171 A.D., although Saladin in fact became ruler of Egypt in 1169. Thus, during his first years in Cairo Maimonides taught *'Ulūm al-awā'il,* the subjects of secular learning such as philosophy, mathematics and medicine, which were studied from translations of the ancient Greek and Syriac texts. Mediaeval Islam separated this type of study from purely theological learning, which was considered the more important.[36] In the Jewish tradition a similar distinction was made with regard to the teaching of religious subjects, for which remuneration could not be accepted. Maimonides himself sharply reminded his readers of the Mishnaic injunction to that effect with the words: "Do not use the Torah as a vehicle for making money."[37]

Ibn al-Qifṭī then goes on to say that at some time after the Ayyūbid succession in Egypt, the Qāḍī al-Faḍil, 'Abd al-Rahīm b. 'Alī al-Baysānī, one of Saladin's highest officials,[38] "took him [Maimonides] under his protection, favoured him and gave him a salary [stipend]. And he joined the doctors. And he did not differ from them in his opinions, for he associated with them but little and he took no part in treatment or regimen."[39]

Nothing more is known about this salary or stipend which Maimonides received at some period after David's death. In the mediaeval Islamic world it was common for rulers and high officials to patronise and assist scholars so that they could continue their scholarly activities without financial cares. For example, 'Abd al-Latif, a famous Bagdadi scholar, was continuously supported by Saladin and other Ayyūbid rulers, so that he was able to spend his life studying and teaching. Among the "sayings" of 'Abd al-Latif which have been preserved, is a defence of the principle that scholars should be granted this kind of remuneration, in order not to have to follow "menial" occupations. His argument that a scholar in any case had no time to make money closely follows Galen's view of the impossibility of pursuing medicine and wealth at the same time.

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[34] See M. Munk, "Notice sur Joseph ben Jehouda," *Journal Asiatique,* sér 3, 1842, *14*: 3-70; Joseph ibn Aknin, 1873, reproduced in M. Steinschneider, *Gesammelte Schriften,* ed. H. Malter and A. Marx (Berlin: Poppelauer, 1925), Vol 1, pp 74-82

[35] *Ibn al-Qifṭī's Ta'rīkh al-Hukamā' (Chronology of Learned Men),* ed J Lippert (Leipzig: Dieterich'sche Verlagsbuchhandlung, 1903), p. 318

[36] *Šarh asmā' al- 'uqqār (L'explication des noms de drogues), un glossaire de matière médicale composé par Maimonide,* ed M. Meyerhof, *Mémoires présentés à l'Institut d'Egypte,* Vol. 41 (Cairo. L'Institut français d'archéologie orientale, 1940). See Meyerhof's introduction, p lii, n 4

[37] Moses Maimonides, *Commentary on the Mishnah, Seder Nezikin,* Arabic text with Hebrew trans by J D. Kappach (Jerusalem Mossad Harav Kook, 1964), Commentary on The Ethics of the Fathers 4,7.

[38] See his biography by A H. Helbig, *Al-Qāḍī al-Fāḍil, der Wezīr Saladin's* (Leipzig: Drugulin, 1908).

[39] *Ibn al-Qifṭī* (see n 35 above), p. 318.

'Abd al-Latif's words are reported as follows:

> The student of knowledge disdains menial occupations and base ways of gaining profit, as he does all kinds of commerce. . . . A friend of mine composed these lines:
>
> Whoever exerts himself in the quest of knowledge is spared,
> By the dignity of knowledge, the meanness of material gains.
>
> All the ways of gaining worldly possessions require utter devotion, special skill and much expenditure of time. A person applying himself to scholarship can afford nothing of this. He can only wait for wealth to come to him without any effort on his part, seeking him out without his seeking it. . . . This seems to be unjust, but when a man has become proficient in scholarship and has gained fame through it, he is sought after from all quarters. . . . At this point wealth approaches him humbly and he takes it without having to debase himself or to betray his honour or faith.[40]

On the other hand, a salary was often given to a practising doctor for his services as body-physician. The passage by Ibn al-Qifṭī quoted above is very obscure, but the words "he joined the doctors" may mean that he joined the doctors' guild.[41] By August 1171 Maimonides already occupied the honorary position of *Rayyis* (Head) of the Jewish community in Egypt; no doubt through the influence of his patron, the Qādī. As *Rayyis* he was possibly expected to practise medicine at the same time—if only to be in a position to bring pressure on his eminent patients, for the sake of his own community. However, Maimonides was soon ousted from this post, although he was to resume it again in 1195 for his final years.[42] Thus, it seems likely that if Maimonides practised medicine at all during this early period in Egypt, he did so only for a short time. Ibn al-Qifṭī seems to say that Maimonides now had little personal contact with either doctors or patients. For many years to come he was to continue his scholarly existence as rabbi and philosopher, completing his greatest works, the *Code* (*Mishneh Torah*) and the *Guide of the Perplexed,* before devoting himself almost entirely to medical practice and medical writing in the last part of his life.[43]

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[40] Ibn Abī Uṣaybi'a (see n. 18 above), p. 692. For the biography of 'Abd al-Latif, including a report of his meeting with Maimonides in 1191, see *ibid.*, pp. 683-696.

[41] See B Lewis, "The Sultan, the King and the Jewish doctor," reprinted in *Islam in History* (London, Alcove Press, 1973), pp. 166-176

[42] On Maimonides as *Rayyis*, see S. D. Goitein, "The title and office of the Nagid: a reexamination," *Jewish Quart. Rev.*, n.s., 1962-63, *53*. 93-119.

Yet, since the days of his youth, Maimonides had taken a lively interest in medical matters. Much of the Hippocratic Corpus and most of the works of Galen had long been translated into Arabic, and it is clear from the numerous quotations which are found in all his medical writings, that he possessed an encyclopaedic knowledge of this Greek medical literature. He also knew the Arabic medical writings, although he quotes from them much less frequently than from the Greek authors.

While still in Morocco, before he arrived in Egypt, Maimonides studied the theory and practice of medicine in an informal manner[44] and often discussed problems with practising physicians.[45] Thus it has been generally accepted that Maimonides even practised medicine in Morocco, as well as from the time of his arrival in Egypt. These claims still persist, although there is little evidence to support them, as was long ago demonstrated by Meyerhof.[46]

In fact Maimonides studied medicine in his youth just as he studied mathematics or astronomy, not for vocational purposes but because they formed part of a philosophical education. A theoretical interest in scientific matters of all kinds was in accord with the Greek endeavour to understand God and the universe, a striving which Maimonides expresses in a Jewish context in the following words: "A man should aim to maintain physical health and vigour, in order that his soul may be upright, in a condition to know God. For it is impossible for one to understand sciences and meditate upon them, when he is hungry or sick."[47]

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[43] It has been suggested that Maimonides only began his medical writings after he had completed all his non-medical works. See J. O. Leibowitz, "Maimonides on medical practice," *Bull. Hist. Med* , 1957, *31*. 309-317.

[44] See his own words in (1) Moses Maimonides, *Treatise on Asthma,* XIII, 33, Mediaeval Hebrew transl., ed. S. Muntner (Jerusalem: Mossad Harav Kook, 1965), p. 114; English translation, ed. S. Muntner (Philadelphia: Lippincott, 1963, p. 91; (2) Moses Maimonides, *Pirke Moshe (Aphorisms of Moses),* Discourse 8, Aphorism 69, Mediaeval Hebrew transl , ed. S. Muntner (Jerusalem. Mossad Harav Kook, 1959), p. 122 English trans. F. Rosner and S. Muntner, *The Medical Aphorisms of Moses Maimonides,* 2 vols. (New York Yeshiva University Press, 1971)

[45] Maimonides, *Treatise on Asthma* (see n 44 above), pp 115-116 (Hebrew), 94-95 (English); M. Steinschneider, "Moses Maimonides—Gifte und ihre Heilung" (trans from the Arabic), (*Virchow's*) *Archiv für pathologische Anatomie,* 1873, *57*. 62-120.

[46] Meyerhof, *Šarh asmā'* (see n 36 above), p. xlvii.

[47] Maimonides, *Mishneh Torah,* Book I, *The Book of Knowledge,* text and English trans. by M. Hyamson

Other philosophers in the mediaeval Islamic world also perpetuated this tradition of studying medicine and science for philosophical purposes, including Al-Fārābī, the tenth-century philosopher whom Maimonides held in the greatest esteem.[48] In his *Tabaqāt al-atibbā' (Sources of Information on the Classes of Physicians)*, Ibn Abī Uṣaybi'a, the thirteenth-century Syrian Muslim physician, describes Al-Fārābī in the following words:

> He was an accomplished philosopher and learned imām [Muslim religious leader] who had mastered the philosophical disciplines and excelled in mathematics. He . . . abstained from worldly pleasures and contented himself with what provided for his needs, leading the life of an ancient philosopher. He had a strong inclination for medicine and was acquainted with its general aspects, but he did not practise it.[49]

This description of Al Fārābī, the Muslim man of religion and philosopher, might be applied practically unchanged to Maimonides, the Jewish man of religion and philosopher, up to the years of his late middle age. Then, unlike Al-Fārābī, Maimonides seriously took up the practice of medicine as a career, to become, as Ibn Abī Uṣaybi'a describes him, "unique in his time in the theory and in the practice of medicine."[50]

The evidence that he eventually became a busy practitioner is to be found in two letters written by him in the latter part of his life. The first of these is addressed to Joseph ben Yehuda, his favourite pupil, who had by then left Cairo to settle permanently in Aleppo, where he was trading as well as studying. It contains the following passage:

> And I hereby inform you that I have achieved very great renown in [the practice of] medicine among the great ones [of the realm], such as the chief of the judges and the emirs and the house of Al-Fādil and other rulers of the land: people from whom one does not obtain anything. And as for the people, I am exalted above them and they are unable to approach me. Things have come to such a pass that I always spend the day in Cairo visiting patients, and when I return to Fustāt, in what is left of the day and during the night, I am able at the most to read what is necessary in my medical books. For you, sir, know how long this art is[51] and how difficult it is for one who has a conscience and is a perfectionist. . . . And as a result I am unable to find an hour to think about religious matters and I do not read the Bible except on the Sabbath. As

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(Jerusalem. Boys' Town, 1962), chap. III, 3:50a Cf Aristotle, *Ethica Eudemia*, 1249b. *The Works of Aristotle in English*, Vol. IX, trans. J. Solomon (Oxford: Clarendon Press, 1940). "What choice then or possession of the natural goods—whether bodily goods, wealth, friends or other things—will most produce the contemplation of God, that choice or possession is best; this is the noblest standard." Cf. also Aristotle, *Nichomachean Ethics*, X viii 9.

[48] See his letter to Ibn Tibbon (see n. 2 above).

[49] Ibn Abī Uṣaybi'a (see n. 18 above), p. 653.

[50] *Ibid* , p. 582.

[51] An echo of the first Aphorism of Hippocrates.

for the other branches of learning, I cannot find time to study any of them. I am sorely troubled by this state of affairs.[52]

These words appear at the end of the long letter, which is mainly devoted to a discussion of Joseph's desire to open a school for Jewish religious studies in Bagdad, where teaching would be based on the *Code* of Maimonides. Yet Maimonides himself is very much opposed to this plan. One of the reasons which he gives is that the young man would be too busy with the school to be able to continue his trading activities, by which he had hitherto maintained himself. He would be obliged to take a salary from the leader of the Jewish community in the Diaspora, thereby putting himself in bondage to a man whom Maimonides scorned. Maimonides therefore suggests that Joseph abandon the idea and apply himself instead to religious and medical studies, meanwhile continuing his trading activities in order to keep himself financially and spiritually independent.

It looks very much as though Maimonides were relating his own unfortunate experience as a gentle warning to Joseph not to become too involved in his everyday activities and thus neglect his philosophical or even his religious studies. Maimonides admits that he is at the beck and call of his important patients, despite the fact that he receives no fee or salary from them (although he doubtless received valuable presents for individual services).[53]

The letter is dated October 1191, but it is likely that the correct date is October 1190.[54] In any case, it clearly refers to a period long after the years around 1171 when Maimonides was dependent on the Qādī al-Fāḍil. Now the position is entirely different and the Qādī is but one of the many eminent patients of Maimonides the practising physician. The letter provides evidence that Maimonides had not long been a busy practitioner. In the first place it is hardly likely that, under conditions such as those described above, he would have accepted Joseph as a pupil in theoretical studies and would even have revised a book on astronomy for him.[55] Moreover, had he been practising medicine continuously from about 1171, as is usually thought to be the case, he would surely have achieved renown by about 1187, when Joseph left Cairo for good,[56] and thus would not have needed to "inform" his friend and follower of this fact a few years later; let alone in so formal a manner. It must therefore be presumed that Maimonides did not take up the practice of medicine as a career until a much later date—around 1185. Since he had long been acquainted with many of his former patients, a very few years would have sufficed for him to make his name as a practitioner, and by 1190 he could have been well established in his new profession.

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[52] Mose ben Maimon, *Epistulae* (Arabic text and Hebrew translation), ed. D. H. Baneth, Fasc I (Jerusalem: Mezike Nirdamim, 1946), pp. 69-70. Here Maimonides addresses Joseph sometimes informally and sometimes extremely formally. It has long been suggested that this letter actually consists of fragments from other letters by Maimonides. See M. Steinschneider, *Catalogus Libr. Hebr. in Bibliotheca Bodleiana* (Berlin: Weltverlag, 1934), Sect. III, col. 1901^6; and more recently, Z. Diesendruck, "On the date of completion of the Moreh Nebukim," *Hebrew Union College Annual*, 1937-8, *12-13:* 461-497. Subsequently, Baneth, *Epistulae* (see above, this note), pp. 33-34, affirmed that the main body of the letter is genuine, but doubts have again been raised by A. S. Halkin, "In defense of Maimonides' Code," *Tarbiz*, 1956, *25*. 413-428 (Hebrew) and iv (English summary).

[53] Mose ben Maimon, *Epistulae* (see n. 52 above), p. 69, note to 1.15 On Galen similarly not taking a fee but accepting gratuities, see Temkin, *Galenism* (n. 17 above), p. 47.

[54] See Munk, "Notice" (n. 34 above) and Mose b. Maimon, *Epistulae* (n. 52 above), p. 33

Another letter from Maimonides, this time to Samuel ibn Tibbon who lived in France, provides a further glimpse of the successful physician, some nine years later, in 1199, when he had been appointed a royal body-physician. Samuel, who was then translating the *Guide* into Hebrew, wished to come to Cairo to discuss the matter. However, Maimonides tried to dissuade him, saying that he was too busy with his practice to receive him, on account of his time-consuming duties at the court of the "king." If the letter is dated correctly, Maimonides must have been referring to Al-Malik al-Afḍal who was at that time the ruler of Egypt, as guardian of the infant heir, Al-Malik al-Manṣūr.[57] The passage concerning the appointment runs as follows:

> My duties for the king are very exacting. It is quite impossible for me not to see him early every day. Moreover, if he feels unwell, or if one of his children or one of his concubines falls ill, I am not allowed to leave Cairo. I spend most of my day at the royal palace and if one or other official is sick I must attend to his treatment. In general, I go daily to Cairo early in the morning and if nothing stands in my way and nothing new has occurred, I return [home] to Fustāt (old Cairo) in the afternoon. Whatever happens I never return earlier. And I am dying with hunger and I find the courtyards [of my house] full of people, non-Jews and Jews, great and small, judges and law officers . . . for they know the time of my return. I dismount from my animal and wash my hands and go out to them in order to appease them . . . for having to wait until I have had a light meal—and a very small one indeed. And [then] I go out to

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[55] Ibn al-Qifṭī (see n. 35 above), pp. 392-393. On the question of the duration of this state of affairs, see n. 57 below.

[56] See Munk, "Notice" (n. 34 above).

[57] See S. Lane-Poole, *A History of Egypt in the Middle Ages*, 2nd ed. (London: Methuen, 1914), pp. 214-215. Al-Afḍal only ruled for some fourteen months before he was deposed and much of this time he spent away from Cairo. Thus, if the "king" referred to in the letter is indeed Al-Afḍal, the state of affairs described by Maimonides could not have been of long duration. On the other hand, although the date of the letter has never been challenged, were it to be out by little more than a year in either direction, this would mean that Maimonides served not Al-Afḍal, but a ruler who was far longer on the throne.

> attend them and to write notes for them and prescriptions for their illnesses. The coming and going does not cease until nightfall and sometimes not for two hours more into the night. I address them—and I am still fasting—and I talk with them, and I lie on my back because I am so tired, and night falls, and from utter weariness I am unable to speak. As a result, no man of Israel can speak with me, or join me and see me alone, except on the Sabbath.[58]

Neither in the Ibn Tibbon letter nor in this *cri de coeur* does Maimonides as a philosopher show any disdain for medical practice. On the contrary, having adopted medicine as a career, he is proud of his success. Yet he deplores the fact that his soul is no longer his own. From the second letter it is clear that his practice is taking up more time than ever, and it must be assumed that he had still less opportunity to continue his theological and philosophical studies. From the tone of both letters one is tempted to speculate that Maimonides was regretfully thinking along the lines laid down by Aristotle regarding the occupations fitting to a philosopher. Aristotle maintained that the citizen should not take part even in a "useful" occupation, if it be one which "makes the body or soul or mind of the freeman less fit for the practice or exercise of virtue. . . . The object also which a man sees before him makes a great difference; if he does or learns anything for his own sake or for the sake of his friends, or with a view to excellence, the action will not appear illiberal; but if done for the sake of others, the very same action will be thought menial and servile."[59]

It has already been noted that this kind of attitude towards occupations such as the practice of medicine was still common in the mediaeval Islamic world. The intention behind the study of a subject was the decisive factor, and it still served to separate those who studied medicine for the sake of philosophy from those who intended to make "illiberal," professional use of their medical knowledge. In medicine, as in the other "arts," the liberally-educated gentleman retained his amateur status and did not turn professional.[60] It was considered "menial" and "servile" to be at the beck and call of patients or other clients.

Yet, by the later Middle Ages, the time of Maimonides, these distinctions between philosopher and practitioner were already becoming blurred. In the East it began to be customary for the philosopher who had obtained a theoretical understanding of medicine in the course of his philosophical studies, to put this knowledge to use, on a professional basis, at some time or other in his career; for example, to finance his travels. On the other hand, with the growth of literacy and the increasing availability of paper, more and more medical practitioners were reading books, were copying out the works of others for their own use, and were even writing treatises or commentaries themselves.[61] Thus, while the highly-educated practitioner was rare in Galen's time, in the mediaeval Islamic world he was becoming a well-known figure.

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[58] Maimonides, Letter to Ibn Tibbon (see n 2 above).

[59] Aristotle, *Politics*, 1337b, VIII 2, *The Works of Aristotle in English*, ed. W. D. Ross, vol X, *Politica*, trans. B Jowett, rev. (Oxford: Clarendon Press, 1921).

[60] See *ibid.*, 1282a, III 11. This is the third and last category of persons who understand medicine, according to Aristotle. The other two have already been discussed.

An early as the ninth century A.D., Rhazes, the Persian physician, who had also written philosophical works, followed the example of Galen in claiming the title of philosopher. When this was denied him, on the grounds that he was a practitioner, he wrote an apologia explaining his point of view.[62] The arguments he used to support his claim are clearly taken from Galen's treatise on the doctor as a philosopher.

This Galenic attitude towards medicine and philosophy was also invoked in the celebrated dispute which took place in 1050 A.D., between Ibn Buṭlān, a Christian physician of Bagdad, and Ibn Riḍwān, his Muslim counterpart in Cairo. Ibn Buṭlān maintained that the physician should obtain his theoretical knowledge by oral instruction from a teacher and not from books. Ibn Riḍwān, however, who was of low birth, was self educated since he could not afford to pay for training. He practised medicine from the very beginning and gradually read the texts by himself. Quoting from Galen's tract to support his case, he retorted that Ibn Buṭlān himself could not be considered the "best" type of physician, since he had neither a complete nor a perfect knowledge of the subjects of a philosophical education.[63]

Towards this controversy, which was long to continue, Maimonides adopted an ambivalent attitude, somewhat remote from the spirit of the time. In his *Treatise on Asthma,* thinking perhaps of himself in the days before he made a career of medicine, he continues to hold a brief for the existence of the "pure" philosopher, who may achieve a wide understanding of medicine without any experience of medical practice. Yet, while clearly distinguishing the philosopher from the practising physician (which he himself represented at the time of writing), he makes a Galenic attempt of another kind to "up-grade" medicine by implying that it is an art (which requires reasoning) rather than a craft:

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[61] For examples, see Iskandar, "An attempted reconstruction" (see n. 7 above).

[62] Rhazes, "Le livre de conduite du philosophe," text and translation, ed. P. Kraus, "Raziana I", *Orientalia,* n s., 1935, *4* 300-334

[63] J. Schacht and M. Meyerhof, *The Medico-philosophical Controversy between Ibn Butlan of Baghdad and Ibn Ridwan of Cairo.* Faculty of Arts publ. no. 13 (Cairo: The Egyptian University, 1937), pp. 12, 18, 36, 77, 83-86, 112-113.

> It is possible and true that a person may be wise in the art of medicine, may be learned in it, root and branch, and [yet] have no experience in the practice of medicine, if he studied from books and not from the elders of this art and did not engage in practice. But it is not true that a person can become an expert [in medicine] by watching and observing how things are done and [yet] have no theoretical knowledge. For medicine is not a craft, like carpentry and weaving, the knowledge of which can be acquired by practice.[64]

This distinction which Maimonides as a practitioner continues to draw between the philosopher and the physician is echoed in the different attitudes he adopts towards Galen as a physician and Galen as a philosopher. In the twenty-fifth and last section of his *Aphorisms,* which was revised, or possibly even written, at the very end of his life, Maimonides speaks of Galen the physician in glowing terms: "This man was very, very efficient in medicine, more than anybody of whom we have heard or whose words we have seen." Yet, as regards Galen the philosopher, Maimonides caustically remarks that "Galen the physician" has been attacked by a very widespread "disease" of the soul, which induces him "to speak on things in which he is very deficient," that is, on matters of philosophy.[65] Clearly, Maimonides would have had little sympathy with Galen's claim, supported by Rhazes, that the "best" physician was a philosopher.

In a similar fashion Maimonides, in his *Guide of the Perplexed,* openly attacks Rhazes as a philosopher, as the author of the *Book of Divine Wisdom,*[66] and in his letter to Ibn Tibbon he maintains that it is unnecessary to read this philosophical work, for Rhazes "is a doctor only," thereby implying that Rhazes is solely a physician and no philosopher.[67]

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[64] Maimonides, *Treatise on Asthma* (see n. 44 above), Chap. XIII, section 30, Hebrew version, pp. 112-113; English version, pp. 88-89. This polemic would appear to be something of a pastiche on Aristotle's views in the *Nichomachean Ethics,* particularly X ix 16 Maimonides denies Aristotle's suggestion that the empirical practitioner may also be effective, and speaks out only for what Aristotle calls "the professional and man of science." In distinguishing carpentry and weaving from medicine, Maimonides is refuting Aristotle's argument in *N.E* , I vi 16. This much-debated question, as to whether medicine is art or craft, cannot be considered here, except to say that on this point Maimonides follows Galen's lead as given in his tract on the doctor as a philosopher. Galen's views on this matter, particularly in this work, have been discussed at length in "Techne," by M. Isnardi, *La Parola del Passato,* 1961, *16.* 257-296.

[65] Schacht and Meyerhof, "Maimonides against Galen" (see n. 4 above). Cf. Maimonides, *Guide* (see n. 1 above), I 34, 40a; p. 76.

[66] Maimonides, *Guide* (see n. 1 above), III, 12, 18b, p. 441.

[67] Maimonides, Letter to Ibn Tibbon (see n. 2 above). In all versions of the text, except MS. Saravel, this phrase is also applied to the tenth-century Jewish philosopher and physician, Isaac Israeli (see *ibid.*). It is generally translated as "he is only a doctor," as, for example, by M. Steinschneider, *Die Hebraeischen*

The rejection of Galen as a philosopher in the *Aphorisms* serves as the preface to a theological-philosophical refutation of certain remarks by Galen in his work, *On the Usefulness of the Parts*. Yet, Maimonides would hardly have gone so far as to decry the philosophical understanding of Galen and Rhazes in general, had he not felt that their basic attitude to the pursuit of philosophy was fundamentally different from his own. Despite their philosophical preoccupations Galen and Rhazes were practitioners heart and soul. To Maimonides the practice of medicine was of lesser importance. In his own eyes and in his heart he was first and foremost a philosopher.

Ubersetzungen des Mittelalters (Berlin, 1893; reprinted Graz. Akademische Verlagsanstalt, 1956), p. 41; and by A. Altmann and S. M. Stern, *Isaac Israeli* (London: Oxford University Press, 1958), p. xiii. It can equally well be rendered "he is a doctor only," as in this paper, or even, "he is solely a doctor." These latter versions obviate any suggestion that a value judgment regarding the practice of medicine was implied here by Maimonides Such an implication is claimed, for example, by Pines in his Introduction to the *Guide* (see n. 1 above), p lx, where he maintains that Maimonides regarded both Rhazes and Isaac as "mere physicians and no philosophers." However, when the phrase is examined in its context, it is clear that here Maimonides is disparaging neither medicine in general, nor Galen, Rhazes and Isaac as physicians, he is simply claiming that their philosophical writings are of little consequence.

HOSPITALS AND PEDIATRICS, 1776-1976*

SAMUEL X. RADBILL

The only general hospital limited to the care of sick people in this country in 1776 was the Pennsylvania Hospital. The second oldest hospital in the country, The New York Hospital, was not accessible to patients until 1791.[1] The Pennsylvania Hospital excluded children except in emergencies so that pediatric services were available only in the almshouses and orphanages. By the time of the Declaration of Independence almshouses were scattered in various towns among the colonies. In addition to their other functions they all provided the services of general hospitals. They rendered care to the sick, they carried out educational activities and they advanced medical knowledge through research. When the Philadelphia Almshouse applied to the state legislature for financial support in 1775[2] it pointed out that it was a hospital in every sense of the word. It had a lying-in hospital with a nursery for the newborn; it had a foundling hospital with 50 infants on an average throughout the year; and it had an isolation hospital for contagious diseases. Before the advent of the 19th century the only place where sick, incurable, helpless and unwanted children could receive public care was in an almshouse or orphanage. There new remedies were tried out and there doctors' pupils received practical training.

If almshouses were the antecedents of the general hospitals, orphanages and foundling asylums were the germinal forerunners of children's medical centers. Just as they were in almshouses, in orphanages the children were set to work at a very early age in hope of producing some revenue in support of their keep. Hospitalism reaped a shocking toll, for a high percentage of the children in these institutions died. The children all needed pediatric care and so we find there were always nurses and doctors attached to children's homes and foundling asylums. The oldest American orphanage is the Bethesda Orphan House near Savannah, Georgia, established in 1738. From the beginning an apothecary was in residence and in that day and age apothecaries were general practitioners. They not only prepared medications, they also diagnosed and treated patients.[3]

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* This paper was presented as part of a Symposium on Pediatrics, 1776-1976, at the Bicentennial Session of the American Academy of Pediatrics, April 12, 1976.

[1] H J. Camman and H. N. Camp, *The Charities of New York, Brooklyn and Staten Island* (New York, 1868), p. 112.

[2] Robert J. Hunter, "Origin of the Philadelphia General Hospital," *Pennsylvania Magazine of History and Biography*, 1933, *57* 45

In the almshouses and other institutions the resident doctors had complete freedom to study and treat children, to correlate clinical findings with pathologic discoveries in the autopsy rooms, to evaluate therapeutic innovations, and it was in such places that the earliest foundations of pediatric knowledge were elaborated. Kenneth Blackfan did some of his earliest research at St. Vincent's Home in Philadelphia;[4] and at the Home for Hebrew Infants in New York Alfred Hess was able to carry out much of his investigative work on scurvy and rickets.[5]

Ambulatory pediatric care was promoted in 1786 with the opening of the Philadelphia Dispensary. A satellite of the Pennsylvania Hospital and a clinical teaching arm of the medical school, it served as a substitute for more expensive hospital care. One interesting example of pediatric research was the effort of Nathaniel Chapman to establish the value of measles prevention by inoculation. This was in 1801 when he tried at the Philadelphia Dispensary to duplicate the work of Francis Home.[6] At the New York Dispensary, opened in 1795, a similar research effort was more successful in 1802 when Valentine Seaman evaluated the new Jennerian method of vaccination for prevention of smallpox. Seaman then opened the Cowpox Institution when his results proved so successful.

The dispensary concept spread quickly to other cities and from several of these dispensaries children's hospitals originated. Home visits, as a rule, were included, with medical students in the early days trailing their preceptors right into the homes of patients. More recently, The Boston Clinic placed particular emphasis on child care, pioneering in social services for children and in preventive clinics.

There were only a few hospitals in this country before 1850. In Boston the Massachusetts General Hospital opened in 1821; and in Cincinnati the first hospital west of the Alleghenies was the Commercial Hospital, opened in 1823, which later changed its name to the Cincinnati General Hospital. These both originated largely through the efforts of medical school teachers who needed clinical cases for the instruction of their students. While the

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[3] S. X. Radbill, "Reared in adversity: Institutional care of children in the 18th century," *Am. J. Diseases of Children*, 1976, *130*: 756.

[4] "Pediatric profiles," *J. Pediatrics*, 1955, *47* 162.

[5] Obituary, *Am. J. Diseases of Children*, 1934, *47*: 639.

[6] S. X Radbill, "Centuries of child welfare in Philadelphia," *Phila. Med.*, 1975, *71*: 369.

Pennsylvania Hospital abhorred children, all the other hospitals welcomed them. In fact when an appeal went forth in 1866 in Boston for a children's hospital, Massachusetts General Hospital argued against the idea contending that it met the hospital needs of children adequately and no separate hospital was needed. Had there been a hospital survey committee or a health service agency in Boston at that time there would never have been a Children's Medical Center in Boston. The Commercial Hospital in Cincinnati, on the other hand, gladly turned over the children for medical care to the Cincinnati Orphan Asylum when that institution was established in 1833. I suspect financial considerations were conducive to this decision, since the medical school faculty had access to the asylum with their students as well as to the hospital. With the spurt in hospital construction that occurred after 1850, most general hospitals provided special wards for children late in the 19th and the early 20th centuries; and with the development of the specialties that paralleled the hospital movement, independent pediatric services were set up. Some of these pediatric departments in general hospitals became so strong, in fact, that separate buildings were erected for them forming children's hospitals within the general hospital complex. Sarah Morris Hospital in Chicago as a unit of Michael Reese; Cook County Children's as a part of Cook County General; and Bobs Roberts Memorial as a unit of the University of Chicago Clinics are some explicit examples. By the turn of this century practically every general hospital had its own pediatric service with a pediatric staff. In addition these hospitals all had outpatient clinics with doctors in attendance who evinced a special penchant for pediatrics. The inpatient services always commanded greater prestige. Outpatient services were subsidiary, generating admissions for the inpatient service and serving as feeders for the hospital beds so that those who worked in the ambulatory clinics always hoped for the more prestigious inpatient staff appointments.

Specialized hospitals began to appear early in the 19th century. Isolation hospitals and pest houses were much earlier, but as a rule these were only temporary in nature. Among special institutions catering to children were those for the deaf and dumb, for the blind, for the feeble minded and for the crippled and deformed. John B. Brown started the first hospital for crippled children in Boston in 1838. He treated club feet, crooked limbs, wry necks, spinal deformities and other orthopedic defects. He was an exponent of "orthopedy" as a specialty. Following in his footsteps, children's orthopedic hospitals sprang up everywhere in the United States. There was even a crippled children's hospital in California as early as 1850. These supplied good training grounds for future pediatricians. L. Emmett Holt, Sr., was a student intern at the Ruptured and Crippled Hospital of New York and this proved to be a vital turning point in his career, for there he was first thrust into contact with sick children.

Massachusetts General Hospital took a dim view of fragmentation of hospital care into separate hospitals. Brown scoffed at their asseverations, however, sarcastically declaring they might as well wish to comprise under their wing the eye and ear infirmary and set up in the business of dentistry.[7] After the first eye and ear infirmary had been established in Connecticut in 1817 by Elisha North, others had followed in New York (1820), Philadelphia (1824) and Boston (1824) so that by the time Brown opened his orthopedic hospital these were recognized as valuable institutions for specialized health care. So far as I know, however, no special hospital for dentistry appeared until the Philadelphia Dental College, now a part of Temple University, opened the Garretson Hospital for Oral Surgery sometime after 1862.

Children's Hospitals

The first hospital for sick children anywhere was in Paris in 1802.[8] Others followed rapidly throughout Europe. In Boston a Children's Infirmary was opened in 1846 but it could not drum up any support from the community and after 18 months closed.[9] In 1852, with the aid of Charles Dickens, Dr. Charles West founded the Hospital for Sick Children on Great Ormond Street in London, the first in all of England, and that same year in New York James Stewart, under the pen name of "Philopedos," then published an appeal for a children's hospital in New York. As a result of this appeal, The Nursery and Child's Hospital started in 1854 as the New York Nursery for Children of Poor Women. Abraham Jacobi was one of the earliest attending physicians. Even though this institution combined maternal and child welfare in its concept, admitting women as well as children, it exerted a considerable impact upon the development of pediatrics as a specialty in this country. Of lesser import was the Infirmary for Women and Children opened in New York in 1853 as an adjunct of the Female Medical College. Neither of these institutions ever disassociated the women from the children.

The oldest American hospital restricted solely to sick children is The Children's Hospital of Philadelphia. It was founded in 1855 and set an

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[7] John B. Brown, *Reports of Cases at the Boston Orthopedic Institution* (Boston: D. Clapp, Jr., 1945), p. 4.

[8] Janos v. Bokay, *Geschichte der Kinderheilkunde* (Berlin: Springer Verlag, 1922), pp. 34-40.

[9] William R. Lawrence, *Diary and Correspondence of the Late Amos Lawrence* (Boston: Gould & Lincoln, 1855), pp. 230-233.

American pediatric pattern which within 25 years was followed successively in Boston, Washington, D.C., New York, Philadelphia, Albany, San Francisco, Detroit, St. Louis and Toronto. Specialization was on the march and pediatrics joined the parade.

The next milestone in American pediatrics was the appointment of Abraham Jacobi in 1860 as the first pediatric professor. It was then that the labored disengagement of pediatrics from obstetrics, and from general medicine, began. Thereafter there was increasing attention accorded to children in hospitals, in medical schools and in private practice. By the time the American Academy of Pediatrics was founded and the American Board of Pediatrics was established every medical school had a pediatric chair and nearly every one of them had a children's hospital for clinical instruction. Pediatrics was then approved as a specialty and the pediatrician eagerly accepted as a specialist.

Today there is an increasing use of complicated mechanical devices, at astronomically mounting costs, to carry out sophisticated procedures in the delivery of health care. There is a need for the facilities of a complex hospital system to provide comprehensive specialized services in diverse categories, and a university setting is essential to pediatric research. Separating children's hospitals at a distance from the basic science centers has become a handicap to the quality and efficiency of highly tailored pediatric services. For this reason, and to avoid costly duplication in the hospital economy, regionalization of hospital facilities is under way, and children's medical centers are moving into all-inclusive university general hospital centers. As early as 1930 Tufts Medical School joined the Beth Israel Hospital to the Boston Dispensary and to the Floating Hospital for Children to form The Tufts Medical Center. More recently, leading the way for others to follow, The Columbia Presbyterian Medical Center brought back into one site in New York City and wove into one close mesh, the Medical School of Columbia University, The Presbyterian Hospital of New York, The Sloane Maternity, The Squier Urological Clinic, The Neurologic Institute, The Ophthalmologic Institute, The New York State Psychiatric Institute, The Vanderbilt Outpatient Clinic and The Babies Hospital of New York. It seems the fears expressed by Massachusetts General about fragmentation of hospital services have now been justified. This comprehensive medical center concept has spread and pediatric elements form important components of the vast conglomerates that now exist in Los Angeles, Boston, Baltimore, St. Louis and at the University of Pennsylvania in Philadelphia. To bring hospital care of high quality closer to the patients' homes, however, a cohesive regional stratified system of community hospitals is now in the planning stage. Such a system of community hospitals will provide the secondary, but less highly specialized services right in the communities. These will then be linked to the regional comprehensive centers for the more intricate types of tertiary care.

Since the passage of the Hill-Burton Act in 1946 the Government has become the dominant force in health care. Health Services Agencies have just been established under the Health Planning and Resources Development Act which will aim at making hospital care more accessible, better organized and less costly. Let us hope they will also improve the quality of health care by continuing the advance of pediatrics in American institutions.

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE REPORT OF THE FIFTY-SECOND ANNUAL MEETING

Pittsburgh, Pennsylvania
May 2-5, 1979

The Fifty-second Annual Meeting of the American Association for the History of Medicine was held in Pittsburgh, Pennsylvania, May 2-5, 1979. Sessions were held at the William Penn Hotel. Preceding the meeting, two continuing education seminars (6 hours of Category II credit), sponsored by the Department of Continuing Education, University of Pittsburgh School of Medicine in co-operation with the American Association for the History of Medicine, were offered: "The History of Herbals in Medical Practice," Jerry Stannard and "Great Artists Look at Doctors and the Medical Profession," David G. Wilkins.

The following report, which includes the program, abstracts of the minutes of the Council and Business Meetings, as well as the financial report for fiscal year 1977-78, has been prepared by the Secretary-Treasurer, Dr. Charles G. Roland, and is intended for the information of the members of the Association. The official minutes and financial report are preserved in the office of the Secretary-Treasurer.

PROGRAM

Wednesday, May 2

5:00 p.m. Registration and Welcoming Reception
7:30 p.m. Council Meeting

Thursday, May 3

9:00 a.m. Welcoming Remarks, Thomas G. Benedek
9:15 a.m. Session 1: Changing Concepts
Theodore M. Brown, *presiding*
"Comments on Five Newly-Translated Essays of Theophrastus: Fatigue, Vertigo, Perspiration, Unconsciousness, and Paralysis," Maurice Charlton
"François Boissier de Sauvages and William Cullen as Clinical Pragmatists," H. Tristram Engelhardt, Jr.
"Two Concepts of Disease in Mechanistic Accounts of Hysteria, 1700-1760," John P. Wright
11:10 a.m. Jacques M. Quen, *Presiding*
"Tuberculosis and French Medical Thought, 1865-1874," Thomas J. Faiola
"The Primal Parricide," Edwin R. Wallace, IV

12:15 p.m. Luncheon Roundtables

1. "Changes I have seen," Owsei Temkin, *Coordinator*
2. "The Medical Instrument: Its Makers and Keepers," Audrey B. Davis, Stanley J. Reiser, *Coordinators*
3. "Research and Teaching in the History of Medicine in the People's Republic of China," Donald G. Bates, *Coordinator*
4. "American Medical Photography, 1840-1870," Stanley B. Burns, *Coordinator*

2:00 p.m. Session II: The Medical Profession

Dora B. Weiner, *presiding*

"The Danger of Stating an Opinion: Reception of Listerism by the American Surgical Association, 1882-83," Mark M. Ravitch

"'To be Used Only Under the Direction of a Physician:' Commercial Infant Feeding and Medical Practice, 1870-1940," Rima D. Apple

3:20 p.m. Gert H. Brieger, *presiding*

"The Medical Profession in Arizona in the 20th Century: The Arizona Medical History Project," G. Wesley Johnson

"The Doctor and the Dying Patient: Its Historical Treatment in the American Medical Association Code of Ethics, 1847-1957," Jeffrey C. Lerner

4:40 p.m. The Fielding H. Garrison Lecture

Genevieve Miller, *presiding*

"'This Greasy Counterfeit': Butter versus Oleomargarine in the United States Congress, 1886," James Harvey Young

Friday, May 4

9:00 a.m. Session III: The Politics of Medicine

Ronald L. Numbers, *presiding*

"Reformers and State Licensure. A Case Study of Massachusetts in 1880," Samuel L. Baker

"The Eugenists and the Residuum: The Problem of the Urban Poor," Pauline M. H. Mazumdar

"Abraham Flexner's Unpublished Report. The Development of Philanthropic Bureaucracy, 1910-1925," Daniel M. Fox

11:00 a.m. Barbara Gutmann Rosenkrantz, *presiding*

"The Limitations of Public Health Activity in Toronto's Municipal Politics: The Caniff Years, 1883-1890," Heather A. MacDougall

"The United States of America v. The American Medical Association: The Medical Anti-Trust Case of 1938-1943," Patricia Spain Ward

12:15 p.m. Luncheon Roundtables

2, 3, and 4, (repetition of those presented on May 2)

5. "Roundtable for Those Working in Medieval and Renaissance Medicine," Jerome J. Bylebyl, *Coordinator*

2:00 p.m. Concurrent Session IV-A: Therapeutics
Todd L. Savitt, *presiding*
"Science and Medicine in Britain in the 1860s: The Physiological Action of Alcohol and the Alcohol Therapeutics Debate," John H. Warner
"Bloodletting in American Obstetric Practice 1800-1945," A. Clair Siddall

2:00 p.m. Concurrent Session IV-B: Medical Research
Leslie A. Falk, *presiding*
"Pediatric Research in an Early American Institution," Samuel X. Radbill
"J. Homer Wright, M.D., The Developer of the Wright Stain," Robert E. Lee and Benjamin Castleman

3:20 p.m. Concurrent Session V-A: Military Medicine
Robert J. T. Joy, *presiding*
"Disordered Minds: A Neglected Aspect of Civil War Medicine," Don Anderson and Godfrey T. Anderson
"The Fall of Bataan—a Medical Defeat," Mary Ellen Condon

3:20 p.m. Concurrent Session V-B: Medical Education
James F. Gifford, Jr., *presiding*
"The Obstetric Institute of Philadelphia: An example of Extramural Medical Teaching in Antebellum America," Dale C. Smith
"'Thoroughly Practical'—America's Polyclinic Schools," Steven J. Peitzman

4:40 p.m. Business Meeting
Genevieve Miller, *presiding*

7:30 p.m. Annual Banquet

Saturday, May 5

Session VI: The Public Health
Stuart Galishoff, *presiding*
9:00 a.m. "The Consumption of Bread and the Consumption of Men," William Coleman
"The French Public Health Law of 1902," Ann-Louise Shapiro.
"Typhus Disaster in the Wake of War: The American Polish Relief Expedition, 1919-1920," Gaines M. Foster

Session VII: Hospital History
Charles Rosenberg, *presiding*
11:00 a.m. "A Unique Medical Community: The New England Hospital for Women and Children 1862-1900," Virginia G. Drachman
"The Patient Population of a French Provincial Hospital, 1895-1925," Evelyn B. Ackerman
"Hospital Governance and Social Change," David K. Rosner

MINUTES OF THE ANNUAL MEETING OF THE COUNCIL

May 2, 1979

The annual meeting of the Council of the American Association for the History of Medicine, Inc. was called to order at the William Penn Hotel, Pittsburgh, Pennsylvania, at 7:30 p.m. on May 2, 1979. President Genevieve Miller served as Chairman, and Charles G. Roland as Secretary. The following Council members and committee chairmen were present: Edward C. Atwater, Thomas G. Benedek, Gert Brieger, William Coleman, Leslie Falk, Gerald N. Grob, Robert P. Hudson, Saul Jarcho, Robert T. Joy, Pauline Mazumdar, Wilhelm Moll, Ronald Numbers, Ynez V. O'Neill, A. Benedict Schneider, Arthur Viseltear, Dora B. Weiner, and Leonard G. Wilson.

The minutes of the last meeting, as circulated to the Council in May 1978, were approved. An abbreviated version was published in the Summer 1978 issue of Volume 52 of the *Bulletin of the History of Medicine.*

The Secretary reported that the fourth annual *Research in Progress,* compiled by James H. Cassedy, was distributed in May 1979. Thirty-six members have applied for membership in the International Society of the History of Medicine. Some procedural difficulties have complicated our relationship with that Society, largely related to problems in obtaining adequate and speedy communication.

Dr. Roland presented the Financial Report for the Fiscal Year 1977/78, ending 31 October 1978. The report was approved for presentation to the Business Meeting, and the President appointed Edward Atwater and Leslie Falk as Auditors. The Treasurer pointed out that the Association has no formal policy with regard to the accumulation or the use of its endowment funds. After discussion, the Council voted for the motion that the AAHM establish a formal Endowment Fund, the principal of which is not to be disbursed without Council approval; all interest from this principal is to accrue to the fund and future additions to the fund are to be made as a result of Council action or in accordance with the wishes of a donor or donors.

Dr. Miller announced that John Z. Bowers has been selected as Garrison Lecturer for 1980. The Chairman of the selection committee was Ilza Veith.

The William H. Welch Medal Committee (Leonard G. Wilson, Chairman) unanimously recommended and the Council approved by mail vote that the medal be given to Charles Webster, of Oxford, England, for his book, *The Great Instauration: Medicine and Reform, 1626-1660* (1976).

The William Osler Medal Committee (John M. Norris, Chairman) recommended and the Council approved the award of the 1979 Osler Medal to Sandra E. Black, the class of 1978 at the University of Toronto School of Medicine, for her essay on "Pseudopods and Synapses: The Amoebid Theories of Neuronal Mobility and the Early Formulation of the Synapse Concept, 1884-1900." A total of 13 entries were received for the contest.

Because of recent inquiries, the question of the precise definition of eligibility for the Osler Medal was discussed. Should students of podiatry, for example, be eligible? Any change in the conditions of award would require a change in the by-laws; therefore these questions were referred to the 1979-1980 Osler Medal Committee with the request that any proposal to change the by-laws be forwarded to the Secretary-

Treasurer no later than March 1, 1980, so that the proposal can be circulated to the membership.

The Loeb Library Committee (Saul Jarcho, Chairman) reported that Paul Potter, University of Western Ontario, London, is approaching completion of the translation of volume V of the Hippocratic treatises for the Loeb Classical Library. Dr. Wesley Smith, of Philadelphia is completing the first year of his work with volume VI. An English translation of the *Canon* of Avicenna is under discussion but no formal proposal has yet been made.

The Editorial Committee has approved a manuscript by Dora B. Weiner for publication as a supplement to the *Bulletin*. The manuscript has been transmitted to the editorial offices. Several questions relating to the inter-relation between the Association and the *Bulletin* were referred to the Editorial Committee after lengthy discussion. Dr. Miller noted that $1500 is budgeted annually for publication support, following guidelines of the Editorial Committee report approved by the Council in 1974.

Dr. Miller reported that 11 AAHM members attended the International Congress in Plovdiv in August 1978. The American Vice-President of the International Society for the History of Medicine, Dora B. Weiner, reported that the next International Congress would be held in Barcelona, August 31 to September 6, 1980. It is possible that grant funds might become available to assist in travel costs for this Congress. The Council voted to empower William Coleman and Robert Hudson to explore the feasibility of obtaining funding from the National Science Foundation to support such travel, and that the elected officers plus Professor Coleman serve as an ad hoc committee to determine the mode of distribution of such funds if they become available. The Council also approved the motion that the President explore the costs, benefits, and desirability of Association membership in the American Council of Learned Societies and report thereon to the next Council meeting.

The Education Committee reported that the survey undertaken in the Fall of 1977 regarding the teaching of the history of medicine to undergraduate college students has been published and that almost 100 copies have been sold to date. Funds sufficient to make this publication possible were approved during 1978 by the Executive Committee, with the proviso that the Association would be reimbursed from the proceeds of sales. Discussion of recent correspondence led to the Council approving the proposal that the request of Ritterbush and Associates to reprint the survey, with the payment of a royalty to the AAHM, be accepted contingent on the agreement of the authors, and that Chester Burns be appointed to negotiate the matter with that firm.

Invitations had been received for the Association to meet, in 1982, in Charlottesville, Virginia, and in Washington/Bethesda. After discussion the Council accepted the invitation from Washington/Bethesda.

The report of the Nominating Committee was received and referred to the Annual Meeting on May 4. The Program Committee and the Local Arrangements Committee reported on their activities, which were implicit in the meetings and presentations May 2 through May 5.

Donald Bates visited the meeting to report on some facets of a recent trip to China. A society for the history of medicine recently has been reactivated there. The President was requested to convey greetings to this society's President and to suggest the possibility of an exchange of publications.

It was reported that Guenter Risse will visit Central and South America this summer. The Council voted that Dr. Risse be appointed a committee of one to study the state of the history of medicine in Central and South America and report his findings to the Council in 1980.

Gert Brieger presented a summary of discussions occurring at luncheons held during the 1978 Annual Meeting on the topic of the future of the AAHM. Among several broad issues was the recurrently stated need for increased communication with and among the membership. The Council approved the proposal that the Vice-President chair a committee charged with considering these issues further and make recommendations to Council on appropriate actions. It was also proposed that the Association establish a quarterly newsletter and that $1000 be budgeted to fund this publication for 1979-80. This motion was carried with one abstention. Ynez O'Neill has volunteered to edit the newsletter.

Six medical historical groups had applied for Constituent Society membership in the AAHM. These are:

History of Medicine Club, Washington University of St. Louis
History of Medicine Department, University of Kansas
Innominate Society of Louisville
Marshfield Medical History Club
Paul Dudley White Medical History Society
Society for Ancient Medicine

The Council voted to accept these six groups as Constituent Societies.

The generous donation, by John P. McGovern, of $200.00 to the endowment fund of the Association, was acknowledged with great appreciation.

The Council meeting adjourned at 11:15 p.m.

Charles G. Roland
Secretary-Treasurer

MINUTES OF THE ANNUAL MEETING OF THE AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE, INC.

May 4, 1979

The Annual Meeting of the American Association for the History of Medicine, Inc. was held in the William Penn Hotel, Pittsburgh, Pennsylvania, at 4:30 p.m. on May 4, 1979. Genevieve Miller, President of the Association, served as Chairman, and Charles G. Roland as Secretary.

The minutes of the previous meeting were approved. Dr. Roland read the names of members who had died since last May. They are as follows:

John M. Connor, Los Angeles, California
John M. Dorsey, Detroit, Michigan
A. S. Gabor, Bethlehem, Pennsylvania
Albert E. Lownes, Providence, Rhode Island
Jay Arthur Myers, Minneapolis, Minnesota
Samuel J. Zakon, Chicago, Illinois

The members rose for a moment of silence.

The Secretary-Treasurer presented a summary of the Financial Report for the Fiscal Year 1977/1978. The Auditing Committee (Edward Atwater, Chairman) reported that the books were in order, and the reports of the Treasurer and the auditors were approved.

A summary of the discussions held and decisions made at the Council meeting May 2 were also presented by the Secretary-Treasurer.

Old Business

The President commented briefly on the activities of the various committees. Dr. Saul Jarcho, on behalf of the Loeb Library Committee, reported that work is nearing completion on Paul Potter's translation of the fifth volume of Hippocrates and has begun on Wesley Smith's translation of volume VI. Dr. Dora Weiner reported the new dates for the 27th International Congress on the History of Medicine, Barcelona: August 31—September 6, 1980.

New Business

The Garrison Lecture Committee announced that the 1980 Garrison Lecturer would be John Z. Bowers.

Janet Koudelka reported, on behalf of the *Bulletin*, that the final number of volume 51 was in the mail, that the supplements will be entitled Sigerist Supplements henceforward, and that a 50-year cumulative index is in preparation.

The President announced that the next annual meeting of the Association will be held in Boston, Massachusetts, from May 1-3, 1980, with local arrangements under the chairmanship of George E. Gifford, Jr. Future meetings will be held in Toronto (1981) and in Washington/Bethesda (1982).

The following officers were elected unanimously:

Secretary-Treasurer:	Robert P. Hudson, Kansas City, Kansas
Members of Council:	Caroline Hannaway, Baltimore, Maryland
(3-year term)	W. Robert Penman, Paoli, Pennsylvania
	Charles Roland, Hamilton, Ontario
	Daniel Weiss, Lexington, Kentucky

The meeting was closed at 5:15 p.m. by the President, Genevieve Miller. Enthusiastic thanks were expressed to the Program Committee, chaired by Edward Atwater, and to the Local Arrangements Committee, led by Thomas Benedek, for the delightful meeting in Pittsburgh. Formal votes of thanks were tendered to Charles Roland, whose term of office as Secretary-Treasurer ended at this meeting, and to Janet Koudelka, who retires June 30 after many years of service as Assistant Editor of the *Bulletin*.

Charles G. Roland
Secretary-Treasurer

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE, INC.

Financial Report on the Fiscal Year 1977/78
Ending 31 October 1978

Classified Statement of Receipts and Expenditures
1 November 1977—31 October 1978

General Fund

RECEIPTS		
Dues		
Active Members (all categories)	$14,995.80	
Non-resident members	540.00	
Constituent Societies	500.00	
International Society for the History of Medicine	910.00	
		$16,945.80
Directory and Mailing List sales		12.00
Loeb Library grant, HEW		600.00
Donation (J. P. McGovern)		200.00
Refund from Johns Hopkins University Press		1,183.00
Transfer from Annual Meeting fund		400.80
Transfer from Publication fund		1,670.00
	1977/78 Total Receipts	21,011.60
	Balance 1 November 1977	2,598.70
		$23,610.30

DISBURSEMENTS		
Subscription to *Bull. Hist. Med.*		12,051.00
Subsidy, *Almost Persuaded*		1,670.00
Administrative Expenses		2,100.00
Dues refunds, NSF cheques, bank charges		195.95
Honors & Awards		
Osler Medal		435.97
Welch Medal		38.22
Garrison Lecture		362.50
Loss, 1978 Annual Meeting		400.80
Transfers to other funds		
Int. Soc. Hist. Med.		910.00
Endowment fund (J. Cassedy)		500.00
Memorials to deceased members		76.68
P. Potter: Loeb Library Grant, HEW		600.00
State of New York		10.00
	1977/78 Total Receipts	19,351.12
	Balance 31 October 1978	4,259.18
		$23,610.30

MEDICO-HISTORICAL NEWS AND ACTIVITIES

CORRESPONDENCE AND REPORTS

APPOINTMENTS IN THE HISTORY OF MEDICINE

Yale University

At its March meeting, the Yale Corporation established a Section of the History of Medicine in the School of Medicine, and appointed Frederic L. Holmes chairman and professor of the history of medicine, effective July 1, 1979. Professor Holmes is internationally recognized as a leading scholar in the history of medicine and science, particularly in the fields of physiology and chemistry.

Establishment of this new Section in the School of Medicine represents the faculty's strong commitment to continuation of educational programs in medical history. It will provide courses for instruction in this field, especially for students in medicine and public health, as well as offer introductory courses for Yale College students. It will also provide resources for scholarly research by postdoctoral students and faculty.

In addition to the appointment of Professor Holmes, the Corporation also appointed Arthur J. Viseltear to the Section as associate professor of the history of medicine and public health. It is anticipated that a number of faculty in the School of Medicine will participate with Professors Holmes and Viseltear in presenting courses and seminars.

Professor Holmes, who is currently chairman of the Department of History of Medicine and Science at the University of Western Ontario, had been on the faculty of the Department of History of Science and Medicine at Yale from 1964 to 1972. A graduate of the Massachusetts Institute of Technology, he received an M.A. degree in history, and a Ph.D. degree in history of science from Harvard University. While at Harvard, he received the Schumann Prize of the History of Science Society, which later awarded him the Pfizer Prize in 1975. In 1978, the American Association for the History of Medicine presented him with the William H. Welch Medal. He is the author of *Claude Bernard and Animal Chemistry* (Harvard University Press, 1974), and numerous articles on the history of medicine.

Professor Viseltear, who has achieved national recognition as a leading authority in the area of contemporary medical history, received his B.A. degree from Tulane University, and his Ph.D. degree in history and M.P.H. degree from the University of California at Los Angeles. He joined the Yale faculty in 1969. For several years he has taught courses and seminars in the history of medicine and public health. In 1974 he was one of the inaugural group of six Robert Wood Johnson Health Policy Fellows selected for a year of Congressional assignment in Washington, D.C. Dr. Viseltear has been adviser to Yale's Contemporary Medical Care and Health Policy Collection since 1975, and is an elected member of the Council of the American Association for

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Professors Holmes and Viseltear are seen before a portrait of Yale's first professor of the history of medicine, John F. Fulton, who was appointed Sterling Professor of the History of Medicine in 1951.

the History of Medicine. He is author of numerous medical history articles and essays.

Osler Library Fiftieth Anniversary Symposium

Over one hundred people gathered at McGill University to attend the Osler Library's fiftieth anniversary symposium, "Books, Manuscripts, and the History of Medicine." The intent of the symposium was to examine in what ways bibliography, the history of medicine, and librarianship, still share common ground after fifty or so years of rapid development. Lloyd G. Stevenson moderated the day's events.

Charles G. Roland of McMaster University delivered the first paper, "'Dry, Dusty, Tedious, Accursed, Hateful Bibliography': Osler and British Bibliography". Richard J. Durling (Institut für Geschichte der Medizin und Pharmazie der Christian-Albrechts Universität, Kiel) presented the second paper, "Medico-Historical Research in Mediaeval and Renaissance Manuscripts," a survey of twentieth-century research in the field. Professor Estelle Brodman of St. Louis University was the third speaker. She looked at the past and the future of enumerative bibliography in a paper entitled, "Looking Forward into Historical Medical Bibliography."

In the afternoon session G. Thomas Tanselle of the John Simon Guggeheim Foundation surveyed twentieth-century developments in descriptive and analytical bibliography and in editorial practice. Eric J. Freeman of the Wellcome Institute for the History of Medicine, London, concluded the symposium by asking the question: "Medical Historians, Librarians and Bibliographers: Will They Ever Meet?"

Adding to the festive aspect of the day was the visit of Dr. Alfred White Franklin who brought greetings from the Osler Club of London and then added a wish of his own, "that the Library will continue to be the inspiration to future generations of medical students and post-graduates giving them a greater understanding of and love for their art."

Philip M. Teigen
Osler Library

ANNOUNCEMENTS

NATIONAL NEWS

Joint Atlantic Seminar

The 15th annual meeting of the Joint Atlantic Seminar for the History of Biology took place at the Institute for the History and Philosophy of Science and Technology, University of Toronto, Canada, April 20-21, 1979. Members of the arrangements committee were Pauline M. H. Mazumdar, Jason A. Hannah Professor of the History of Medicine, University of Toronto, and Mary P. Winsor, Associate Professor of the History of Biology, University of Toronto.

Cheiron

The twelfth annual meeting of Cheiron, The International Society for the History of Behavioral and Social Sciences is to be held at Bowdoin College, Brunswick, Maine, June 19-21, 1980. Papers may deal with aspects of any of the behavioral and social sciences. Information about the program may be obtained from Dr. Rand Evans, Department of Psychology, Texas A. & M. University, College Station, Texas 77840.

Clio Medica

Beginning with the 1979 issues *Clio Medica*, the official publication of the International Academy of Medical History, will have a new editor—Prof. Dr. Marielene Putscher, Institute for the History of Medicine, University of Cologne, Robert Kochstrasse 10, 5 Cologne—Lindenthal, West Germany. *Clio Medica* desires articles by American scholars on general, national, or international subjects that relate to important issues in the history, philosophy, and sociology of medicine and the health sciences, as well as papers dealing with past and present teachings of these disciplines. All contributions should be sent directly to the Editor or to one of the two American members of the Editorial Board: Dr. Guenter B. Risse, Department of the History of Medicine, University of Wisconsin Center for Health Sciences, 1305 Linden Drive, Madison, Wisconsin 53706; Professor Dora B. Weiner, Department of History, Manhattanville College, Purchase, N.Y. 10577. Dr. Risse has also been appointed as the new Book Review Editor of *Clio Medica*. In future issues, the journal hopes to present several extensive essay reviews on important new links in the field of medical history.

Duke University

Japanese civilization and the impact of western medicine in developing countries were the subjects of two guest lectures given at the History of Medicine Reading Room, Medical Center Library, Duke University on April 17, 1979. Dr. John Z. Bowers, President, Josiah Macy, Jr. Foundation, spoke on "The Rise of Western

Medicine in Japan" and Professor Thomas Huber, Duke University History Department, discussed "The Tokugawa Background."

Awards

The American Institute of the History of Pharmacy has conferred two awards. The George Urdang Medal, for distinguished pharmacohistorical writing internationally, has been awarded to Dr. John K. Crellin of Duke University, Durham, North Carolina, for his excellent research on the history of pharmaceutical artifacts including his *Catalogue of Medical Ceramics in the Wellcome Institute of the History of Medicine* Vol. I., (1969). The Edward Kremers Award, for distinguished pharmacohistorical writing has been presented to Professor John M. Riddle, Department of History, North Carolina State University, Raleigh, North Carolina, for his publications on the history of ancient and medieval pharmacy, particularly his *Marbode of Rennes (1035-1123), De Lapidus considered as a Medical Treatise, with Text, Commentary and C. W. King's Translation, together with Text and Translation of Marbode's Minor Works on Stones* (1977).

Appointment

Wayland D. Hand, Emeritus Professor of German and Folklore, UCLA, has been named to the Board of Editors of *Ethnomedizin: Zeitschrift fur interdisziplinare Forschung*, Hamburg. Professor Hand's *Magical Medicine*, a series of his own selected essays, is scheduled for early publication by the University of California Press.

University of Pennsylvania

A panel discussion was sponsored by the Department of the History and Sociology of Science of the University of Pennsylvania on May 10, 1979. The topic was "Comparative Studies in the History of Science, Technology, and Medicine." Speakers included Professor Gerald L. Geison, Princeton University, Professor Thomas P. Hughes, University of Pennsylvania, Professor Charles Leslie, University of Delaware, and Professor Rosemary Stevens, University of Pennsylvania.

Rockefeller Archive Center

During 1979 the Rockefeller University made 11 grants-in-aid to support projects requiring substantial research in the Rockefeller Archive Center. Further grants, ranging from $500 to $1000, will be made to graduate students or advanced scholars engaged in similar projects for the year 1980. Applications for grants must be made before December 31, 1979. Inquiries about the program and the open collections at the Center should be addressed to: Director, Rockefeller Archive Center, Hillcrest, Pocantico Hills, North Tarrytown, NY 10591.

PROGRAMS OF MEETINGS

Mayo Foundation History of Medicine Society, Rochester, Minn.

July 11, 1979: "William H. Feldman, D. V. M., D.Sc., and his pioneer work on chemotherapy of tuberculosis at the Mayo Clinic, "Alfred G. Karlson.

NEWS FROM ABROAD

France

The International Academy of the History of Medicine reports with sadness the death of its President, Professor M. Florkin on May 3, 1979. The new President, elected by the members of the Academy, is Professor J. O. Leibowitz of Israel. New members of the Academy chosen in the June ballot are Owen Wangensteen, William Bynum, Jerry Stannard, Jane Oppenheimer, and G. Legée. The next Symposium of the Academy will take place in Strasbourg (France), September 8-10, 1980, following the 27th International Congress of the History of Medicine (Barcelona, Spain, August 31 - September 6, 1980). The theme will be "General and microscopical anatomy in the 19th century."

England

An International Symposium on the Influence of Nutrition upon Naval and Maritime History, organized by the National Maritime Museum, Greenwich, London, with the assistance of the Wellcome Institute for the History of Medicine, will be held at the Museum from 16-18 April 1980. For information contact the Conference Officer, International Symposium on the Influence of Nutrition upon Naval and Maritime History, National Maritime Museum, Greenwich, London SE10 9NF.

BOOK REVIEWS

MANFRED ULLMANN. *Islamic Medicine*. Edinburgh: at the University Press, 1978 (Islamic Surveys, 11). xiii + 138 pp. Ill. £3.50.

During the century following the flight of Mohammed from Mecca to Medina (622), the Arabic tribes established an empire extending from northern Spain to the borders of India. In the conquered countries Arabic became the prevailing language and Islam the dominant religion. To some extent, therefore, Islamic medicine and the more conventional name, Arabic medicine, can be used synonymously, as they are in the present book, though many physicians, such as the Syrian Christian, Ḥunain ibn Ishāq, the Persian adherent of Mazdaism, ʿ Alī ibn al-ʿ Abbās al-Majūsī (Haly Abbas), and the Jewish philosopher and theologian, Maimonides, were neither Arabs nor Mohammedans.

In 1970, Manfred Ullmann, professor of Islamic Studies at the University of Tuebingen in Western Germany, published *Die Medizin im Islam*[1] (Medicine in Islam). With this work and the third volume of Fuat Sezgin's *Geschichte des arabischen Schrifttums*[2] (History of Arabic Literature), the German reader was in possession of a comprehensive coverage of Arabic medicine as documented by its literary sources both printed and in manuscript holdings. The English reader, however, was, in the main, still dependent on E. G. Browne's *Arabian Medicine* (Cambridge, 1921), a charming little book which, however, has become antiquated in parts, especially regarding the transmission of Greek medicine to the Arabic world. This chapter is all important, because the inheritance of Greek medicine in its late Galenic form, closely allied with philosophy, shaped the character of Arabic medicine and gave it its homogeneous appearance. In comparison, the sources from India and Persia were of minor importance.

Much of Professor Ullmann's own research has been in the area of "Greek into Arabic";[3] it has considerably broadened our knowledge of ancient authors, such as Rufus of Ephesus. The large space allotted to ch. 2, "The age of translations," which follows a short first chapter down to the Umayyad period (750), is. therefore, understandable. It is also justifiable in view of the selectivity that a survey imposes. As the author explains, the book is not supposed to be a history. The "Survey of the history of Arabic medicine" (ch. 3) deals but briefly with the names of important physicians and books. The "terms of reference are limited. This means that important areas like surgery and hospital institutions, and questions like the doctor's social standing, the doctor-patient relationship, or medical teaching, will not be discussed; and from the multitude of interesting medical theories, only a few can be selected and presented." (p. xiii). We may regret the omission of those topics, but their inclusion without substantially lengthening the book would have led to such a sketchy treatment of everything, that more would have been lost than gained. Professor Ullmann has given preference to a discussion of the substantive thought of basic and clinical works, as the following chapter headings indicate: "Physiology and anatomy" (ch. 4), "Pathology" (ch. 5), "Dietetics and pharmaceutics" (ch. 7), and "Medicine and the occult" (ch. 8). These are all subjects in which the influence of Greek, especially Galenic, medical thought was paramount, in spite of the fact that the materia medica was enlarged by drugs from countries foreign to the Greeks. Even in ch. 6, "The Transmissibility of illnesses and the plague," ancient influence is still surprisingly great.

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[1] Leiden-Cologne: E. J. Brill (*Handbuch der Orientalistik*, section 1, supplementary volume VI, 1).

[2] Leiden. E J. Brill, 1970.

[3] This is the title of a collection of essays of Richard Walzer (Harvard University Press, 1962).

Notwithstanding its brevity, the book touches on many subjects that are of interest, not only for the tyro. Thus the discussion of the various expressions (and confusions) regarding the Greek *phrenitis* (pp. 28-30) is a valuable contribution to the history of medical terminology. Students of medieval civilization, both Arabic and Latin, will be fascinated by the section on "erratic blocks" (pp. 24-25), i.e. books translated or other information received, yet not assimilated and thus remaining "dead book knowledge conscientiously passed on through centuries" (p. 26). Among the examples, the author cites names of snakes unknown to the Arab world, or earth from Lemnus (*terra sigillata*) and from other Aegean islands, unobtainable to the authors of Spain and Persia. In these erratic blocks I am inclined to see the extreme of a phenomenon which Professor Ullmann characterizes as "remoteness from reality" (p. 76) when he speaks of the elaboration of traditional types of disease with no attention paid to actual syndromes (melancholia is the example cited). He contrasts this with the praise meted out to Arabic doctors "for the fact that they were sharp observers and acquired their own experience at the sick bed" (p. 77; see also pp. 81-82 for the insufficiency of the inherited theoretical equipment). The same phenomenon obtains in medieval Latin authors and in their anatomical texts, which deviated from what the anatomized body showed. Seen as a general phenomenon of medieval medicine, the clinical histories of Rhazes and his description of smallpox (pp. 82-84), the description of the pulmonary circulation by Ibn an-Nafīs (pp. 68-69)[4] and of the human mandible as one piece by ʿ Abd-al-Laṭīf (p. 71), as well as the realistic description of the plague of 1348 by Ibn al-Khaṭīb as a recognizable nosological entity out of the customary vague "epidemics" and "pestilences" (pp. 92-95), appear as isolated breaks from the tradition of books as repositories of learning to be "handed over" from generation to generation.[5] Whatever the explanation of this phenomenon, which is not limited to medicine, it suggests that medieval books in general, and textbooks in particular, permit but a poor insight into what physicians were aware of and what they actually did in their practice. How far tradition dulled awareness or merely impeded its expression could perhaps be further elucidated by an intensive investigation of non-medical literature of all kinds in which medicine is not the formal subject and in which doctors were not bound to think and to behave as tradition demanded of them.

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[4] I cannot share the belief (p. 69) that Michael Servetus had become aware of Ibn an-Nafīs' discovery through Andrea Alpago. The Sharh at-Tashrīh was rare, and there is no evidence that Alpago or even his Arabic mentor (see *Bull Hist. Med*, 1969, *63*: 188-89) were acquainted with it. Since Ibn an-Nafīs and Servetus essentially described a true theory, they were bound to have most points in common.

[5] To this cf Michael W. Dols, *The Black Death in the Middle East* (Princeton: Princeton University Press), 1977, pp 74-83.

There are a few points that seem questionable to me. The list of "seven elementary substances (*dhātus*) involved in digestion" according to Indian medicine names only six (p. 20). Rudolf Virchow had been an anti-contagionist, but when bacteriology began to develop, his attitude was cautious rather than hostile (p. 91). Asclepiades was not a Methodist (p. 21). In addition I would like to suggest that a new edition either add translations to all book titles or relegate the untranslated ones to the notes, where they will be available for philologically minded readers, without distracting the attention of others, especially of medical men and those medical historians whose main interest lies in other periods.

Professor Ullmann and the translator, Dr. Jean Watt, deserve our thanks for providing an instructive and stimulating book in English that will facilitate entry into a subject that is fascinating by itself and important for the development in the West.

Reviewed by OWSEI TEMKIN, M.D., William H. Welch Professor Emeritus of the History of Medicine, The Johns Hopkins Institute of the History of Medicine, Baltimore, Md.

R. TED STEINBOCK. *Paleopathological Diagnosis and Interpretation: Bone Diseases in Ancient Human Populations*. With a Foreword by T. Dale Stewart. Springfield, Ill.: Charles C Thomas, 1976. xvi + 423 pp. Ill. $26.95.

The study of the signs and distribution of injuries, disease and malnutrition in the remains of pre- and proto-historic peoples—more briefly known as Paleopathology[1]—began in the nineteenth century as an avocation of archaeologists, physicians and pathologists; in the latter half of the twentieth century it has acquired the status of a discipline. It is a discipline young enough, however, not to have produced a text dedicated to synthesizing the field and providing guidance in the analysis of lesions. Steinbock's recent work, *Paleopathological Diagnosis and Interpretation*, is the first major attempt to fill this gap. It is therefore almost certain to have a long life; it is equally sure to come under particularly close scrutiny by paleopathologists who have long desired such a textbook.

A considerable literature already exists on paleopathology, including short technical articles,[2] collections of "classics,"[3] monographs on specific disease entities or the disease experiences of archaeological populations,[4] and descriptive surveys of the field.[5] Steinbock selects from this and the orthodox medical literature to produce a readable, thorough, but relatively brief synthesis calculated to train rather than merely enlighten. The book has many attractive features which will make it useful to students and others; not surprisingly it has a number of limitations as well.

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[1] Paleopathology includes sub-specialties in paleo-epidemiology and paleo-nutrition, paleodemographers often employ paleopathological data in their research.

[2] Consult, for example, G. J. Armelagos, J. H. Mielke, J. Winter (compilers), *Bibliography of Human Paleopathology*. Anthropology Research Reports, 8 (Amherst: University of Massachusetts Press, 1971).

[3] D. Brothwell and A. T. Sandison (editors), *Diseases in Antiquity: A Survey of the Diseases and Injuries and Surgery of Early Populations* (Springfield, Ill. Charles C Thomas, 1967).

[4] For example· D. Brothwell and B. A. Chiarelli (editors), *Population Biology of the Ancient Egyptians* (New York: Academic Press, 1973); P. V. Glob, *The Bog People* (Ithaca, N.Y : Cornell University Press, 1965, 1969); S. Jarchó (editor), *Symposium on Human Paleopathology* (New Haven: Yale University Press, 1966); J S Miles, *Orthopedic Problems of the Wetherill Mesa Populations* (Mesa Verde National Park· National Park Service, 1975), D. Morse, *Ancient Disease in the Midwest*, Reports of Investigations, 15 (Springfield: Illinois State Museum, 1969); and many others.

The text opens with a too-brief overview of "Bone as a Living Tissue." The remaining nine chapters cover trauma, pyogenic osteomyelitis, treponemal infection, tuberculosis, leprosy, the anemias, metabolic bone disease, arthritis, and tumors and tumor-like disorders. An obvious omission is a chapter on nutritional disease in ancient remains. Each chapter provides information on the history of the disease, current knowledge of the disease, a survey of reported ancient cases, and indications for diagnosis and differential diagnosis in dry specimens. Each also includes a generous bibliography, photographs of gross and x-ray specimens and, often, diagrams or summary tables in formats familiar from medical texts. Both an author and a subject index are provided. The chapters, individually well-organized, are only loosely interrelated, so that the overall effect of the book, if read in sequence and not consulted piecemeal as a reference manual, is somewhat choppy. This lack of interrelationship is only obtrusive when occasionally the sections on differential diagnosis get slighted.

Steinbock's intended readers are physical anthropologists, who do the majority of current research in paleopathology and who are largely responsible for its conversion from the description of "curios" to epidemiological and demographic analysis of the health experiences of extinct populations. Indeed, this work will make a fine (though expensive) text for advanced students of paleopathology, and will also be useful to archaeologists, forensic pathologists and anthropologists, historians of disease and others who do not study paleopathology full-time but who need a detailed source book. For specialists it will serve as a practical introduction, especially of bibliographic material, for those beginning new research or faced with interpreting a problematic lesion.

In his preface Steinbock takes as his goal the provision of "a basic framework for diagnosis and interpretation" (p. ix). He plans to employ the "population" (rather than "descriptive") approach, to emphasize "differential diagnosis," and to limit the scope of his analysis to the major disorders as expressed grossly in bone. The latter decision is wise since the inclusion of material on mummies, bog bodies, coproliths and the like would have demanded too much of one writer, and made the book too bulky; while work on microscopic and chemical interpretations of dry bone lesions probably still remains in too experimental a stage to be worth an overview. The choices of the population approach and the emphasis on probabilistic statements about cause of lesions reflect current thinking in paleopathology, and as goals are admirable though possibly—at this time and for this author—too ambitious. This is because a large proportion of older paleopathological literature is wholly descriptive in content and intent and therefore cannot easily be analysed by other approaches;

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[5] For example: P. A. Janssens, *Paleopathology, Diseases and Injuries of Prehistoric Man* (New York: Humanities Press, 1970); R. L. Moodie, *The Antiquity of Disease* (Chicago: University of Chicago Press, 1923); L. Pales, *Paléopathologie et pathologie comparative* (Paris: Masson, 1930); C. Wells, *Bones, Bodies and Disease: Evidence of Disease and Abnormality in Early Man* (London: Thames and Hudson, 1964).

and because Steinbock, a physician with limited experience in paleopathological analysis, has little basis from which to argue besides that provided by the already-limited literature. Thus in the end, the "framework" Steinbock provides is traditional and largely descriptive—a review of published works in paleopathology organized in a manner to facilitate consultation. Useful at this is—and it *is* useful—I feel the book suffers because the author takes no theoretical position about his material. He offers no insights from his personal research nor does he provide critical or novel interpretations of data published elsewhere. The assumption that diagnosis—the actual identification of a past disease in dry bone—is possible is neither questioned nor discussed; the desirability of "differential diagnosis" is noted and data tending to permit it is provided, but the basis for the need is not discussed, nor is the method. In this regard I heartily wish Steinbock had included a chapter, or at least a section, on method in paleopathological analysis. How, after all, does one control for bias in archaeological populations?, distinguish the normal, borderline and pathological in bone morphology?, interpret x-ray pictures of archaeological specimens?, perform a differential diagnosis? Without such basic guidance readers (students) are forced to depend upon tradition for their interpretations, instead of being led to formulate and test, diagnose and interpret, on their own.

In summary, although this book has certain limitations, it is nevertheless a useful synthesis of current knowledge in paleopathology. As such it will find an important place as a sourcebook—one at this time almost literally "beyond compare" since it is the first of its kind in the field. The book is sure to influence the form of future textbooks in paleopathology—whether for better or worse remains to be seen.

Reviewed by CLAIRE M. CASSIDY, Ph.D. Department of Anthropology, University of Maryland; Research Collaborator, Smithsonian Institution, Washington, D.C.

Acta Congressus Internationalis XXIV Historiae Artis Medicinae, 25-31 Augusti 1974, Budapestini, 2 vols. Budapest: Semmelweis Medical History Museum, Library, and Archives, 1976. 1670 pp. Ill.

The Proceedings of the 24th International Congress of the History of Medicine, held in Budapest, Hungary, August 25-31, 1974, are worthy successors to the splendid volumes from the 1972 Congress in London. The editors rearranged the various papers and placed them in five categories. Section A contains presentations dealing with changes in medical attitudes during the 18th and 19th centuries. The articles proceed from general methodological questions to the discussion of specific developments in various countries, especially Hungary. In turn, Section B is devoted to an examination of medical relationships between Eastern European countries and the rest of the world, while Section C includes papers on the relations between medicine and the arts, as well as a symposium on late 18th century medicine. A final Section D brings together miscellaneous works including topics in the history of psychiatry, pharmacy and folk medicine. More than half of the writings are in French, German and Russian, the official languages at the Congress in addition to English. No attempt was made to provide small summaries in English, especially for those articles written by Russian scholars.

The papers are preceded by a ten-page account of the activities related to the Congress, including opening and closing speeches richly illustrated by photographs.

A list of participants, arranged in alphabetical order, is appended together with an author index. A very useful reference index listing all the historical personalities discussed in the 244 articles completes the work. Many of the presentations are supplemented with graphs, paintings and photographs.

It would be impossible to analyze all presentations and unfair to single out specific articles for praise or criticism. While the Congress provided opportunities for conviviality and personal contact, these proceedings now allow the reader an overview of contemporary scholarship in the history of medicine not available elsewhere. For selected topics of his interest the reviewer has used similar previous publications to establish scholarly exchanges with a number of authors working in related fields. Thus, the goals of the International Society of the History of Medicine in furnishing opportunities for the exchange of ideas are promoted further through the publication of the *Proceedings*. Let us hope that such a dialogue will be sustained and even expanded, especially across the Atlantic.

Reviewed by Guenter B. Risse, M.D., Ph.D., Professor of the History of Medicine, University of Wisconsin Center for Health Sciences, Madison, Wis.

Burton A. Konkle, *Standard History of the Medical Profession of Philadelphia.* Second edition, enlarged and corrected, by Lisabeth M. Holloway. New York: AMS Press, 1977. 544 + 32 + 7 + 24 pp. $67.00.

Lisabeth Holloway deserves our gratitude for reproducing this nineteenth-century compendium of the medical history of Philadelphia. Originally published in 1897, largely the effort of a graduate student, Burton Konkle, who went unnamed in the original credits, the book has long served, despite its many technical flaws, as a standard reference on the subject. Now it has been revised and rendered much more usable by Ms. Holloway. Errors have been corrected; a useful index has been added; and a comprehensive bibliography of references related to Philadelphia medicine has been included. Only a table of contents, inexplicably, was not provided.

The major use of this volume is for reference. The book is far too massive and unwieldy for profitable or pleasurable general reading. The narrative may run for three or four uninterrupted pages, listing all the presidents of a society or every member of a medical faculty. Much of the material is biographical, written in a largely eulogistic, uncritical style. Throughout the book there is no attempt to analyze or interpret the mass of facts presented. Yet it is in this morass of detail that the book's chief value as a primary source to contemporary historians emerges. All aspects of Philadelphia's medical history are included—from public health to medical education to the city's medical literature. Nowhere else is to be encountered such a complete and accurate record of the persons and events important to medicine in that city. Social historians, for example, may find the names and addresses of all physicians practicing in Philadelphia in 1860 to be helpful in understanding the patterns of health care delivery in the city at that time. The array of detail has been made much more usable by the index and bibliography. The book thus offers a meaningful starting point to understanding the medical history of the city and should provide useful reference to anyone interested in that subject.

Reviewed by Kenneth M. Ludmerer, M.D., Department of Internal Medicine, Washington University School of Medicine, St. Louis, Mo.

THE BULLETIN RECENTLY RECEIVED*

Rudolf Ausfeld. *Anfänge der sozialpsychiatrischen Bestrebungen im Kanton Zürich, dargestellt anhand der Jahresberichte des Zurcher Hilfsvereins für Geisteskranke von 1875-1975.* Zürich: Juris Druck + Verlag Zurich, 1977. (Zurcher Medizingeschichtliche Abhandlungen, Neue Reihe Nr. 120). 92 pp.

Lawrence Badash. *Radioactivity in America: Growth and Decay of a Science.* Baltimore, MD: Johns Hopkins University Press, 1979. xv + 326 pp. $18.95.

Rudolf Bezel. *Der Physiologe Adolf Fick 1829 = 1901: Seine Zurcher Jahre (1852-1868).* Zurich: Juris Druck + Verlag Zurich, 1979. (Zurcher Medizingeschichtliche Abhandlungen, Neue Reihe Nr. 126). 85 pp.

Stefan Bielinski (Editor). *Research and Publications in New York State History 1977.* Albany: New York State Museum, 1978. xv + 158 pp.

John B. Blake (Editor). *A Short Title Catalogue of Eighteenth Century Books in the National Library of Medicine.* Bethesda, MD: National Library of Medicine, 1979. 501 pp. $11.50.

Richard L. Blanco. *Physician of the American Revolution Jonathan Potts.* New York: Garland STPM Press, 1979. xv + 276 pp. Ill. $17.50.

Felix Georg Brunner. *Pathologie und Therapie der Geschwulste in der antiken Medizin bei Celsus und Galen.* Zürich: Juris Druck + Verlag Zurich, 1977. (Zurcher Medizingeschichtliche Abhandlungen, Neue Reihe Nr. 118). 110 pp.

Jerome J. Bylebyl (Editor). *William Harvey and His Age: The Professional and Social Context of the Discovery of the Circulation.* Baltimore, MD: The Johns Hopkins University Press, 1979. xii + 154 pp. $12.50.

Martha Fletcher (Editor). *Théophile de Bordeu: Correspondance.* Montpellier: Centre National de la Recherche Scientifique, Université Paul Valéry, 1979. 4 Vols. II + 226 + 319 + 407 + 367 pp.

Walter Forrer. *Zahnarztliche Volksmedizin im Appenzellerland.* Zurich: Juris Druck + Verlag Zurich, 1977. (Zürcher Medizingeschichtliche Abhandlungen, Neue Reihe Nr. 119). 36 pp.

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ARCHIBALD GARROD AND THE DEVELOPMENT OF THE CONCEPT OF INBORN ERRORS OF METABOLISM

ALEXANDER G. BEARN AND ELIZABETH D. MILLER

"In this long, roundabout way, first in *Drosophila* and then in *Neurospora*, we had rediscovered what Garrod had seen so clearly so many years before. By now we knew of his work and were aware that we had added little if anything new in principle."[1]

These words, taken from George Beadle's 1958 Nobel Prize lecture, drew widespread attention, particularly from geneticists, to the originality and significance of the work of Sir Archibald Edward Garrod. Beadle recalls that he first learned of the work of Garrod about 1942[2] and first referred to this pioneering physician in 1945.[3]

By 1901, Garrod recognized what he called "inborn errors of metabolism" as the cause of a rare recessively inherited anomaly known as alkaptonuria. It was to be a long time, however, before physicians and geneticists would come to appreciate Garrod's massive contributions to our understanding of the hereditary transmission of human traits. It was not so much that his work was ignored by his contemporaries, but rather that its broad significance for biology and medicine was, except for a few physiologists who heard of Garrod's work through Sir Gowland Hopkins, largely overlooked.[4]

Although a number of excellent articles have been written about Sir

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[1] G. W. Beadle, "Genes and chemical reactions in Neurospora," Nobel Lecture, December 11, 1958, *Nobel Lectures, Physiology or Medicine, 1942-1962* (Amsterdam-London-New York Elsevier, 1964), p 596.

[2] Personal Correspondence, G W Beadle to A. G. Bearn

[3] G. W. Beadle, "Biochemical Genetics," *Chemical Reviews*, 1945, *37*. 15-96

[4] Beadle, op. cit. (n. 1 above), pp 587-598.

Archibald Garrod,[5] his life and work will require still further study if we are to understand why a London physician should have had such a brilliant insight into modern molecular genetics. In addition to being a respected pediatric and general physician, Garrod was passionately interested in the rigorous application of physiological chemistry to clinical problems, and it was in this way that he made his far-reaching contributions to biological science. We cannot, in this short article, do full justice to Garrod's life and professional career. Instead we will restrict our analysis to those events which led to his investigations on inborn errors of metabolism with particular emphasis on Garrod's first love, alkaptonuria.

In our exploration of the roots of Garrod's scientific work, we will consider, albeit briefly, Garrod's education and medical training in an attempt to gain insight into his research career. Through a study of his letters and published work, we hope also to define more precisely when Garrod first developed his ideas on the hereditary transmission of metabolic errors. We hope that by focusing on Garrod's research, we will understand better how his studies on alkaptonuria have contributed to modern biochemical genetics. Before considering his work, however, it may be useful to provide some brief biographical information on Garrod's life and education.

Archibald Edward Garrod was born in 1857, the fourth son of Sir Alfred Baring Garrod, M.D., F.R.C.P. Sir Alfred was a distinguished London physician who gained scientific recognition by demonstrating an increase in the blood uric acid in patients with gout.[6] Archibald's older brothers were both highly successful award-winning scholars. Indeed, his entire family was exceptionally brilliant and Archibald, intellectually challenged by influences at home, was determined to follow the scholarly example set by his brothers.[7]

Archibald's formal education began at a preparatory school in Harrow, and in 1873 he entered Marlborough. Although a fair student, he did not do well in the classics and at one point his father even considered withdrawing him from school. Fortunately, young Garrod was encouraged by

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[5] D. Bearman, "The reception of A. E Garrod's 'Inborn Errors of Metabolism' in British medical, biochemical and genetics communities," Read at the Joint Atlantic Seminar on the History of Biology, Washington, D.C., March 18, 1978, A G. Bearn, "Lettsomian Lectures, Inborn errors of metabolism," *Trans Med. Soc London*, 1976, *93*. 47-63; B. Childs, "Sir Archibald Garrod's conception of chemical individuality, a modern appreciation," *New England J. Med.*, 1970, *282* 71-77

[6] A B. Garrod, "Observations on certain pathological conditions of the blood and urine in gout, rheumatism and Bright's disease," *Trans Med Chir Soc Edinburgh*, 1848, *31* 83

[7] Bearn, op. cit (n. 5 above).

Farrar, the headmaster of Marlborough, to pursue more single-mindedly his scientific interests, a field in which he was already beginning to excel.[8] Garrod remained at Marlborough until 1876, and then entered Christ Church, Oxford, as a commoner and, in 1880, graduated with a First in Natural Science. During his final year at Oxford, Garrod received the Johnson Memorial Prize for an essay entitled, "The Nebulae: A Fragment of Astronomical History."[9]

Following graduation, Garrod decided to pursue a medical rather than a purely scientific career, and entered St. Bartholomew's Hospital in London. He found his clinical work at medical school much to his liking, and during his student days received many awards, including the coveted Brackenbury Scholarship.[10] After qualifying M.R.C.S., L.R.C.P. in 1884, Garrod spent a post-graduate year in Vienna where he attended the medical clinic at the Allgemeines Krankenhaus and, in his spare time, learned about the clinical usefulness of the recently developed laryngoscope. Always ready to record his experiences, he published, on returning home, a little book in which he described the clinical value of that instrument.[11] In 1885, at the age of twenty-eight, Garrod was awarded his D.M. degree from Oxford and, in the same year, became a member of the Royal College of Physicians in London. Six years later, in 1891, he was elected a Fellow of the College. Two years after Garrod entered clinical practice in London, he married Laura Elizabeth Smith. Together, they raised a family of three sons and a daughter.[12]

In 1886, Garrod received his first appointment as Casualty Physician at St. Bartholomew's Hospital and for the next twenty-seven years held a variety of staff positions in several London hospitals. Two years after his appointment at Barts, he became Assistant Physician to the West London Hospital and, in 1889, he also joined the staff of the Hospital for Sick Children at Great Ormond Street, first as assistant and later as full physician. It was not, however, until 1903, when Garrod was forty-six years old, that he was promoted to Assistant Physician at Barts, and it was to be another nine years before he became a full physician there. In 1910, when he was fifty-three years old, Garrod was elected a fellow of the Royal Society.

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[8] C. J. H Hart, "The life and works of Sir Archibald Garrod," *St. Bartholomew's Hosp. J.*, August 1949, 160-165, 185-190.

[9] Bearn, op. cit (n. 5 above), A. E. Garrod. *The Nebulae A Fragment of an Astronomical History* (Oxford, 1882)

[10] Bearn, op cit. (n. 5 above).

[11] A. E. Garrod, *An Introduction to the Use of the Laryngoscope* (London, 1886)

[12] Royal College of Physicians, April 1975.

At the beginning of World War I, Garrod interrupted his consultant practice to serve in the Army; he was posted to Malta and was awarded a C.M.G. and a K.C.M.G. for his medical work. He paid a terrible personal toll during the war; two of his sons were killed in action, and his third son died of influenza in Germany after the Armistice.[13] Only his daughter, Dorothy, survived to give Garrod solace and pride. Indeed, Dorothy's brilliant career gave her father good cause for pride: In 1919, after demobilization she joined her parents in Malta, where her father "in his wisdom distracted her mind towards interest in the antiquities." She later returned to Malta and discovered, in 1925 and 1927, fragments of a Neanderthal skull-cap. Dorothy Garrod became one of England's most distinguished Pleistocene archeologists of her time and, in 1939 was elected the first woman professor at Cambridge, holding the Disney Professorship of Archaeology.[14]

At war's end, Garrod returned to England inconsolably grieved by the loss of his three sons. Despite his personal grief he threw his energy into improving medical education and was instrumental in creating a Medical Unit at Barts, designed specifically to investigate physiological and biochemical aspects of clinical disease. In 1919, he became its first Director, but remained there only one year. In 1920, he was chosen to be Regius Professor of Medicine at Oxford. He retired from that position in 1927, at the age of seventy, and later moved to Cambridge where he died in 1936.[15]

Although Garrod's training as a consultant was traditionally clinical, we find, upon closer examination, that his innate scientific curiosity was never entirely satisfied by purely clinical work. Soon after he joined the staff at Barts, he collaborated actively with his father in his study of rheumatoid arthritis. In the beginning he leaned on his father's experience and advice, but it was not long before Garrod extended his father's work and, before he died, had written twenty-six papers on the subject of arthritis.[16]

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[13] Hart, op cit. (n 8 above), 186

[14] G. Caton-Thompson, "Dorothy Annie Elizabeth Garrod, 1892-1968," *Proceedings of the British Academy*, n d., *55*.

[15] Several biographical sources were used. Bearn, op. cit. (n. 5 above); Hart, op. cit. (n. 8 above); F G. Hopkins, "Obituary, Sir Archibald Garrod," *Nature*, 1936, *137* 770-771; F. G Hopkins, "Archibald Edward Garrod," *Obituary Notices of the Royal Society*, 1938, *2 (6)* 225-228; W. E. Know, "Sir Archibald E. Garrod," *Genetics*, 1967, *56*· 1-6, A. Young, Royal College of Physicians and Surgeons of Glasgow, Excerpt from the Minutes of Meeting of Faculty held on 6 April 1936, "Sir Archibald Garrod," *Brit Med J.*, 1936, *1*· 731-733; "Sir Archibald Garrod," *Lancet*, April 4, 1936, 1, 807-809; "Sir Archibald E. Garrod," *St. Bartholomew's Hosp Rep*, 1936, *69*· 12-26; A. E. Garrod, Biographical information submitted to the Royal College of Physicians, September 1931.

While Garrod was at Barts he had the good fortune to meet the distinguished physiological chemist Frederick Gowland Hopkins at nearby Guy's Hospital. From Hopkins, Garrod gained a scholarly understanding of biochemistry which enabled him to study the chemical aspects of hereditary disease. Garrod and Hopkins, bound by a shared interest in physiological chemistry, became life-long friends and scientific collaborators. Between 1895 and 1897, Hopkins and Garrod published several papers on urobilin and haematoporphyrin in the urine.[17] Their friendship continued and when Garrod died, Hopkins wrote a warmly appreciative biographical memoir for the Royal Society.[18]

Since the earliest of times, the study of urine by physicians has always been an attractive scientific pastime. Many diseases 'advertise themselves' through visible and chemical changes in the urine, and Garrod, fascinated by urine of unusual color, set out to investigate the chemical reasons underlying the change in color.

Garrod's early papers on urohaematoporphyrin were, for the most part, descriptive and in fine chemical detail. He used spectroscopic analysis and laborious chemical isolation to identify specific compounds. Although Garrod was probably drawn to the study of urine by his early work on rheumatoid arthritis,[19] chemical pathologists, in an effort to determine specific causes for disease, were beginning to examine the urine of patients with a variety of conditions.

During the 1890s Garrod continued to develop and expand his interest in the chemical nature of urinary substances. He examined countless specimens of urine and attempted to isolate chemical compounds in pure form. Using this approach, he hoped to compare the quantity of a substance excreted in normal urine with amounts found in the urine of patients with clinical disease. By this means, Garrod found that urohaematoporphyrin was present in the urine of healthy individuals, but was excreted in increased quantities in patients with a variety of diseases.[20] Garrod isolated and identified four distinct constituents of urine: urobilin, urochrome, uroerythrin and haematoporphyrin. In 1894, he wrote a paper entitled "A Contribution to the Study of Uroerythrin,"[21] and in 1895, studied urochrome.[22] Both Garrod and Hopkins were particularly interested in the biological and clinical significance of urobilin and published extensively on the chemistry of this pigment.[23]

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[16] A E Garrod, Bibliography.

[17] F G. Hopkins and A. E. Garrod, "Notes on the occurrence of large quantities of haematoporphyrin in the urine of patients taking sulphonal," *J. Path & Bact.*, 1896, *3* 435-448, F. G. Hopkins and A. E. Garrod, "On urobilin, Part I. The unity of urobilin," *J. Physiol*, 1896, *20*· 112-114, F G. Hopkins and A E. Garrod, "On urobilin, Part II The percentage composition of urobilin," *J. Physiol*, 1897-8, *22* 451-464.

[18] Hopkins, op. cit. (n. 15 above, Obit. R.S)

[19] A. E Garrod, "On the occurrence and detection of haematoporphyrin in the urine," *J Physiol*, 1892, *13* 598-620; A. E. Garrod, "On the presence of urohaematoporphyrin in the urine in chorea and articular rheumatism," *Lancet*, 1892, 1: 793.

As Garrod held clinical appointments at three London hospitals he had ample opportunity to examine the urine from patients with many diseases. In an effort to find a biochemical cause for the disease, Garrod analyzed the urine chemically, as well as paying close attention to the medical histories of the patients under his care. He investigated colored urine for many years; in 1895, for instance, Garrod published a paper with the unusual title, "A Specimen of Urine Rendered Green by Indigo."[24] There were many other examples of patients with colored urine. One of particular interest to Garrod, and now of great historical importance, was alkaptonuria, then known colloquially as "black urine disease." As the term implies, alkaptonuria was recognizable because those affected passed urine which on exposure to the air turned black.

Archibald Garrod first encountered the disease alkaptonuria in 1897 when the urine of one of his patients turned the tell-tale black.[25] In his typically thorough manner, Garrod investigated the history of the disease. He found references to it by Bodeker in 1859, and by Wolkow and Baumann in 1891.[26] According to these earlier reports, alkaptonuria was caused by an intestinal organism which converted tyrosine to homogentisic acid, a black compound, which was then excreted in the urine.

As a result of his own investigations, however, Garrod questioned this hypothesis. His own experience suggested that the disease was life-long and caused the patient few adverse effects. Garrod postulated that the disorder was caused by a chemical, possibly inborn, error in the body which gave rise to the disorder.[27] To pursue this possibility he analyzed chemically urine from patients suffering from alkaptonuria and, in 1899, Garrod published an article entitled, "A Simple Method for the Extraction of Homogentisinic (sic) Acid from the Urine."[28] In this short paper, Garrod focused entirely on methods used for reliable chemical extraction. The approach had borne fruit and Garrod's work with Hopkins had directed his attention to the biochemistry of disease, and from now on Garrod preferred to study disease from a chemical standpoint.

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[20] Hopkins, op. cit. (n. 15 above, Obit R S.), 226.

[21] A. E Garrod, "A contribution to the study of uroerythrin," *J. Physiol.*, 1894, *7* 439-450.

[22] Idem, "Late researches on urochrome," *Med Press Circ*, 1895, *59* 238-240.

[23] Garrod and Hopkins, op. cit. (n 17 above).

[24] A E Garrod, "A specimen of urine rendered green by indigo," *Trans Clin Soc London*, 1895, *28* 307-309.

[25] Hopkins, op cit (n 15 above, Obit R S.), 227

[26] Bodeker, "Mittheilungen aus dem chemischen Laboratorium des physiologischen Institutes zu Gottingen, "*Zeit f Rationelle Med.*, 1859, ser 3, *7* 130, M Wolkow and E. Baumann, "Ueber das Wesen der Alkaptonurie," *Zeit f physiol Chemie*, 1891, *15* 228.

In the same year, Archibald Garrod wrote a second paper on alkaptonuria in which he discussed the disease in detail; the chemistry of alkaptonuria was considered as well as the clinical symptoms in thirty-one cases.[29] In this paper he noted that the anomaly tended to run in families. His extensive family studies showed no single instance of a child directly inheriting the disease from either parent, leading Garrod to conclude that alkaptonuria was unlikely to be an example of simple hereditary transmission.[30]

While Garrod's studies on alkaptonuria were progressing, a highly significant biological event occurred. In 1900, after nearly forty years of obscurity, Gregor Mendel's work on heredity was rediscovered. Not surprisingly, Mendel's ideas caused many scientists to look at their biological experiments from an entirely new perspective. William Bateson, a botanist, was one of Mendel's keenest disciples. In 1902, he published *Mendel's Principles of Heredity*, and in this classic work, he explained the hereditary principles which Mendel had observed in his study of garden peas.[31]

Meanwhile, Garrod was busy collecting all of the known cases of alkaptonuria in the literature. In 1901, he wrote to William Osler at Johns Hopkins Hospital enquiring about the frequency of alkaptonuria in the

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[27] Hopkins, op. cit. (n. 15 above, Obit. R.S.), 226.

[28] A. E. Garrod, "A simple method for the extraction of homogentisinic (sic) acid from the urine," *J Physiol*., 1898-9, *23:* 512-514.

[29] A. E. Garrod, "A contribution to the study of alkaptonuria," *Medico-Chir. Trans*., 1899, *82*. 369-394.

[30] Garrod, op. cit. (n 29 above), 370, "Life-long alkaptonuria is sometimes met within several members of a family, but, although brothers and sisters are apt to share this peculiarity, I know of no instance in which it has been transmitted from one generation to another. When it occurs in families, some members are apt to escape, and a child born between two alkaptonuric members may pass normal urine "

[31] W. Bateson, *Mendel's Principles of Heredity* (Cambridge, 1902). Bateson referred to Garrod's study of alkaptonuria, but curiously described the urine as red.

United States.[32] He also corresponded with physicians in Germany and Italy. As Garrod learned more about the anomaly, he became utterly convinced that alkaptonuria was not caused by the action of an intestinal organism, but was, rather, a result of an inborn chemical error or "metabolic sport" as he now called it.[33] However, Garrod still wanted to provide unequivocal proof that alkaptonuria was congenital and not caused by the introduction of an organism into the intestines after birth. In his 1901 article, "About Alkaptonuria," he reported this key observation.[34] Garrod knew that the mother of one of his alkaptonuric patients was pregnant with her fifth child. When the baby boy was born on March 1, 1901, Garrod instructed the nurses to examine the diapers carefully for any trace of darkening or staining. Fifteen hours after birth, there were no stains. By the morning of the second day, the diapers were slightly stained, and by 10:30 a.m., on March 3, just fifty-two hours after birth, the infant's diapers had changed color and were deeply stained.[35] This crucial evidence enabled Garrod to state with assurance that alkaptonuria was a congenital disorder, probably attributable to an error in the chemical make-up of the body.

In this same article, Archibald Garrod discussed the relation of alkaptonuria to his observed increased parental consanguinity among the parents of those affected. He acknowledged that Kirk, in 1886,[36] was the first to recognize that alkaptonuria could occur in families.

> However, although brothers and sisters share this peculiarity, there is, as yet, no known instance of its transmission from one generation to another . . . On the other hand, I am able to bring forward evidence which seems to point in no uncertain manner, to a very special liability of alkaptonuria to occur in the children of first cousins.[37]

Garrod's discovery that first cousin marriages tended to yield a higher percentage of alkaptonurics was both exciting and significant. In 1901, however, Garrod was not sufficiently aware of the significance of Mendel's work to understand why the marriage of first cousins would be more likely to produce an alkaptonuric child. It was not until he discussed the matter with William Bateson that Garrod began to appreciate the important role of consanguinity in hereditary diseases.

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[32] W Osler to A. E. Garrod, 1901, John Innes Institute

[33] A E. Garrod, "The incidence of alkaptonuria a study in chemical individuality," *Lancet*, 1902, 2 1616-1620

[34] A. E Garrod, "About alkaptonuria," *Lancet*, 1901, 2· 1484-1486

[35] Ibid.

[36] Ibid.

[37] Ibid., 1484.

Bateson, on learning of Garrod's work, quickly realized that alkaptonuria might be an example of a recessive hereditary trait. On December 17, 1901, he presented a paper to the Evolution Committee of the Royal Society, and in his report, discussed the significance of Garrod's observation that the parents of alkaptonurics frequently were first cousins:[38]

> In illustration of such a phenomenon (the persistence of hidden recessives) we may perhaps venture to refer to the extraordinarily interesting evidence lately collected by Garrod regarding the rare condition known as "alkaptonuria". In such persons, the substance, alkapton, forms a regular constituent of the urine, giving it a deep brown colour which becomes black on exposure.
>
> The condition is extremely rare, and, though met with in several members of the same families, has only once been known to be directly transmitted from parent to offspring. Recently, however, Garrod has noticed that no fewer than five families containing alkaptonuric members, more than a quarter of the recorded cases, are offsprings of the unions of *first cousins*. In only two other families is the percentage known, one of these being the case in which the father was alkaptonuric. In the other case the parents were *not* related. Now there may be many other accounts possible, but we note that the mating of first cousins gives exactly the conditions most likely to enable a rare and usually recessive character to show itself. If the bearer of such a gamete mates with individuals not bearing it, the character would hardly ever be seen; but first cousins will frequently be bearers of *similar* gametes, which may in such unions meet each other, and thus lead to the manifestation of the peculiar recessive characters in the zygote (emphasis original).

In late 1901 or early 1902,[39] Bateson and Garrod began to correspond and discussed, at length, the significance of consanguinity in relation to alkaptonuria. It is difficult to determine whether Garrod first sought Bateson's assistance or if Bateson wrote to Garrod because he knew about his work on alkaptonuria. The only letters we have been able to examine are those written by Garrod to Bateson.

In a letter to Bateson, dated January 11, 1902, Garrod begins, "It was a great pleasure to receive your letter and to learn that you are interested in the family occurrence of alkaptonuria."[40] (This reference to an earlier letter might indicate that Bateson initiated the correspondence after having read Garrod's article in *The Lancet* in November, 1901.) After these opening remarks, Garrod went on to discuss the known incidences of alkaptonuria throughout the world. He then posed a direct question: "Do you attach any importance to the kind of first cousinship? In the only cases in which I have such information the parents were the *children of sisters* . . ." (emphasis original).[41] Garrod, almost certainly familiar by this time with Bateson's Report to the Evolution Committee, realized that consanguinity was significant. Although he did not use the language of genetics, it would seem that he now understood the concept of recessive inheritance:

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[38] W. Bateson, Report of the Evolution Committee of the Royal Society, December 17, 1901 (London, 1901), p 133.

[39] It is unclear when Garrod and Bateson began to correspond The first letter we have on record, received from the John Innes Institute, Norwich, Eng., is dated 11 January 1902.

[40] A. E. Garrod to W. Bateson, 11 January 1902, John Innes Institute, Norwich, Eng.

> I am convinced that alkaptonuria is actually and not merely apparently rare—and this renders it very improbable that two actually alkaptonuric strains should unite, but may it not be that the condition results from the union of two potentially alkaptonuric strains, and that such potentiality is much less rare.[42]

Later in the same month, in a letter dated January 14, Garrod again emphasized consanguinity in recessive diseases:

> Both alkaptonuria and cystinuria are conditions which advertise their presence, and it seems probable that there are other freaks of metabolism which do not do so. If these are equally rare the task of looking for them in urines generally seems almost hopeless, but if one limits oneself to the children of cousins the field will be very much narrowed.[43]

There can be no doubt that Garrod was one of the first to appreciate the significance of Mendelism in human diseases. As little as one year after Mendel's work had been rediscovered, Garrod was relating genetic concepts to chemical variations in man. Garrod not only appreciated the medical importance of recessive inheritance, but he also recognized the reality of the larger and ultimately more important concept of human chemical individuality. In the same letter Garrod wrote:

> I have for some time been collecting information as to specific and individual differences of metabolism, which seems to me to be a little explored but promising field in relation to natural selection, and I believe that no two individuals are exactly alike chemically any more than structurally. I fancy that monstrosities or rather malformations, vestigial remnants and individual differences all have their chemical analogues.[44]

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[41] Ibid.

[42] Ibid

[43] Garrod to Bateson, 14 January 1902.

[44] Garrod to Bateson, 11 January 1902.

It is thus abundantly clear that, by 1902, Garrod had grasped the idea of human biochemical individuality. It was self-evident that individuals looked different physically, but it was an entirely new and far-reaching concept to suppose that each person's chemical make-up was individually distinct. Seventy-eight years later the subject of human biochemical individuality is topical, accepted, and of expanding interest.

On March 20, 1902, in another letter to Bateson, Garrod again tried to comprehend reasons for the sporadic occurrence of alkaptonuria in certain families:

> The metabolic error in these cases is evidently a definite and constant one. May we not look upon it as separated from the normal metabolism by a dividing line, and that members of certain families run much closer to this line than do others. When members of such families intermarry a certain proportion of their offspring overstep the line by intensification of the family tendencies.[45]

Throughout 1902, Garrod examined the hereditary aspects of all the alkaptonuric cases he could find. In December, 1902, he published his most quoted work on alkaptonuria: "The Incidence of Alkaptonuria: a Study in Chemical Individuality."[46] In this article, Garrod discussed all the cases of alkaptonuria known to him and offered explanations for the occurrence of the anomaly:

> There is no reason to suppose that mere consanguinity of parents can originate such a condition as alkaptonuria in their offspring, and we must rather seek an explanation in some peculiarity of the parents, which may remain latent for generations, but which has the best chance of asserting itself in the offspring of the union of two members of a family in which it has been transmitted . . . It has recently been pointed out by Bateson (Mendel's Principles of Heredity, 1902) that the law of heredity discovered by Mendel offers a reasonable account of such phenomena.[47]

Thus, it is apparent that by the close of 1902, Archibald Garrod understood the biological significance of consanguinity in the causation of alkaptonuria. Garrod not only recognized that alkaptonuria was a chemical anomaly, but he also realized that many other disorders of the body, including in some instances congenital malformations, could almost certainly be traced to a hereditary chemical imbalance of metabolism. In the 1902 article, he discussed albinism and cystinuria as two additional examples of inborn errors.

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[45] A. E. Garrod to W. Bateson, 20 March 1902, John Innes Institute.

[46] Garrod, op cit. (n. 33 above).

[47] Ibid., 1618

Garrod never lost his interest in inborn errors. He was always on the look-out for additional cases of alkaptonuria, as well as other chemical disorders. In 1904, he wrote a general paper entitled, "On Black Urine."[48] Since this article was published in *The Practitioner*, it is probable that Garrod was attempting to present his ideas to a larger and more general medical audience.

In subsequent publications, Garrod frequently returned to his original interest in the chemical aspects of alkaptonuria. In 1906, he and T. S. Hele published a paper on homogentisic acid.[49] Two years later, W. H. Hurtley and Garrod wrote an article on uroleucic acid in alkaptonuria.[50] During the intervening year, J. W. Clarke joined Garrod in writing about yet another case of alkaptonuria. The article was short and focused more on the chemistry than the genetics.

In 1908, Archibald Garrod delivered the Croonian Lectures before the Royal College of Physicians. He chose as his topic "inborn errors of metabolism."[51] The lectures were published as a book a year later under the same title.[52] In his lectures he discussed alkaptonuria, albinism, cystinuria, and pentosuria. Here he was convincingly persuasive that these four anomalies were but the beginning of a growing category of chemically defined disorders caused by inborn errors of metabolism. Thus, although Garrod first enunciated his concept of inborn errors in 1901, it was not until 1909 that his work appeared in book form. Sadly, Garrod's colleagues did not recognize that the Croonian Lectures were a contribution of crucial importance to medicine and biochemical genetics; the lectures brought forth little in the way of discussion and desultory book reviews.

Why were scientists and physicians so slow to appreciate the general applicability of Garrod's ideas and why did human biochemical genetics lie fallow until the middle of this century? These questions are complex and will be considered in a subsequent paper. Certainly, they cannot be answered simply by dismissing Garrod as an obscure scientific recluse. On the contrary, Garrod was a well-known and admired London physician who published frequently in *The Lancet* and the *British Medical Journal* on many subjects, in addition to inborn errors of metabolism.

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[48] A. E. Garrod, "On black urine," *The Practitioner*, 1904, *72*· 383-396

[49] T E. Hele and A. E. Garrod, "The uniformity of the homogentisic excretion in alkaptonuria," *J Physiol.*, 1905-6, *33* 198-205.

[50] W. H Hurtley and A. E. Garrod, "On the estimation of homogentisic acid in urine by the method of Wolkow and Baumann," *J. Physiol.*, 1905-1906, *33:* 206-210

[51] A. E. Garrod, "The Croonian Lectures on Inborn Errors of Metabolism," Delivered before the Royal College of Physicians of London, On June 18, 23, 25, 30, 1908, ii, 1-7, 73-79, 142-148, 214-220.

[52] A E. Garrod, *Inborn Errors of Metabolism* (Cambridge, 1909).

The full appreciation of the significance of Garrod's work, however, faced a number of handicaps: physicians were not interested in alkaptonuria, or other inborn errors of metabolism, because they seldom, if ever, saw any cases of these rare disorders. Geneticists, on the other hand, had not begun to study systematically the genetics of man. Genetic workers at the time, as Fruton explains so well in his scholarly book, *Molecules and Life* (1972),[53] were more likely to be engrossed in the study of drosophila. Early drosophila enthusiasts such as Morgan, Sturtevant, Bridges, and Müller, found eager assistants to help count thousands of fruit flies. The reproduction rate of drosophila made them far more accessible and agreeable organisms to study genetics. Between 1910 and 1920, plants and animals were added to drosophila in the pursuit of genetic principles. The names of Onslow, Wheldale, Scott-Moncrieff, Haldane and Wright were familiar to geneticists as investigators of unusual pigmentation, but only in rabbits, plants and guinea pigs.

Biochemists remained skeptical of the generality of Garrod's findings because he never demonstrated an enzymatic deficiency in alkaptonuria, but only postulated that one existed. The claim of Gross in 1914[54] that there was a deficiency of a serum enzyme which splits homogentisic acid was subsequently proved to be incorrect. The enzymatic deficiency in alkaptonuria, as Garrod predicted in his Croonian Lectures, resides not in the blood but the liver. This was ultimately proved correct in 1958 when LaDu and his colleagues demonstrated an absence of homogentisic oxidase in the liver.[55]

It was not until after the mid-fifties, following Beadle and Tatum's classic work on neurospora that genetic studies in man became prominent, and the brilliance of Archibald Edward Garrod became universally recognized.

Acknowledgments

This fragment of the life of Archibald Garrod could not have been written without the help of friends and colleagues who shared their per-

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[53] J Fruton, *Molecules and Life* (New York. Wiley-Interscience, 1972), pp. 232, 241.

[54] O. Gross, "Ueber den Einfluss des Blutserums des Normalen und des Alkaptonurikers and Homogentisinsaure," *Biochem. Zeit.*, 1914, *61* 165

[55] B. N. LaDu, V. G. Zannoni, L. Laster, and J. E. Seegmiller, "The nature of the defect in tyrosine metabolism in alkaptonuria," *J Biol Chem* , 1958, *230* 251.

sonal recollections of Garrod and aided one of us (A.G.B.) in obtaining source material. I am particularly grateful to Professor B. J. Harrison of the John Innes Horticulture Institute for permitting me to examine letters from Garrod to Bateson. Although it is not possible for me to thank all the individuals who have helped, I would particularly like to express my gratitude to Dr. George W. Beadle, Dr. D. Bearman, A. W. Cock, Dr. Sewell Wright, and Professor L. J. Witts. I have come to rely on the frank criticism of Dr. Barton Childs: his discussion has helped me settle many points of difficulty, and Dr. Joseph Fruton deserves my deep gratitude for reasons that he alone knows. This paper is based, in part, on a lecture delivered to the Johns Hopkins Medical History Club, Jan. 11, 1978, as well as the Lettsomian Lectures of the Medical Society of London, Feb. 9, 1976.

THE CHINESE RECEPTION OF INDIAN MEDICINE IN THE FIRST MILLENNIUM A.D.

PAUL U. UNSCHULD

To Professor Dr. Herbert Franke on his 65th Birthday

The earliest reliable indication of the existence of a Buddhist community in China dates from 65 A.D. It appears that the upper strata of Chinese society were the first attracted to the new teaching. But by the fourth century at the latest, Buddhism had permeated all segments of the population. It was inevitable that the introduction of this world view to China also brought a new dimension to the field of health care, expanding the already existing spectrum of medical systems in that country. In this paper I will discuss some of the conceptual consequences of this early case of cross-cultural transfer of primary medical resources. I shall analyze the impact of Indian concepts of health and healing on China and I will suggest two reasons as an explanation for failure of some of these concepts to find lasting acceptance.

An assessment of the Chinese reception of Indian medicine should take into account a number of variables. These include, first, the nature of conceptual medical systems prevalent in China at the time of the introduction of Buddhism; second, the socio-political conditions in China during the first millennium A.D.; and, third, the nature and origin of Indian concepts of health care brought to China. In treating this last point I will inevitably provide information familiar to students of Indian culture. However, to make my argument plausible I will emphasize certain characteristics of Indian medical concepts which might, otherwise, not receive sufficient attention.

My discussion will be based on a thesis that close parallels may exist between a therapy system's concepts of the character, causation, treatment and prevention of illness on the one hand and a socio-political theory's concepts of the character, causation, treatment and prevention of socio-political crises on the other hand, if the two are supported, in society, by one and the same group.[1] This thesis was derived from an

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[1] A more detailed outline of this thesis was published by Paul U. Unschuld, "Die konzeptuelle Überformung der individuellen und kollektiven Erfahrung von Kranksein", in H. Schipperges, E. Seidler, and P. Unschuld, eds , *Krankheit, Heilkunst, Heilung*, (Freiburg K. Alber Verlag, 1978), pp. 491-516.

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analysis of European and Chinese medical history, focusing on the question of why, in pluralistic social settings, different groups have created, adopted or supported differently conceptualized therapy systems. One of the reasons for the parallels alluded to above may be found in the fact that any socio-political theory, be it Confucianism, Christianity or Marxism, contains specific ideas of social harmony and, as a consequence, advocates specific modes of social and individual behavior to either strive for or maintain a desired social harmony. Similarly, medical systems are based on specific ideas of personal health and, as a consequence, advocate specific modes of individual and social behavior to either maintain or regain a desired status of health. In both the history of Europe and China dogmatists of secular or religious world views appear to have recognized that the chances of their socio-political theories successfully shaping society are increased if the behavioral norms advocated by these theories conform with behavioral norms propagated by a dominant health care system. Such insights explain why all major political groups in Europe and in China have favored a particularly conceptualized therapy system while, at the same time, they fought, in some instances vigorously, others whose behavioral norms appeared to jeopardize the success of specific social theories. Buddhism seems to be the only exception from this rule and it will be one of the main objectives of this paper to point out in what respect this religion differed from other world views and how this difference may have influenced Buddhist attitudes towards health care.

Prior to the introduction of Buddhism, Chinese civilization had developed a number of distinct conceptual therapy systems. Three of them should be taken into consideration here; these are demonological medicine, pragmatic drug therapy and the medicine of systematic correspondence.

Demonological medicine appears to have been developed about the seventh or sixth century B.C.; it probably was the most popular therapy system in Chinese culture until modern times. Demonological medicine is based on a knowledge of the existence of a hierarchy of spirits and demons. The lower echelons of this hierarchy especially must be regarded as evil because they are constantly out to attack and harm human beings. Illness is perceived, in this medicine, as the result of some kind of a demonic attack. A sudden hit (*chung-o*) or possession (*kuei-chu*) are typical demonological concepts. Prevention of illness was considered to be possible. In order to ward off petty evil demons specific talismans would be worn. These talismans and amulets were designed as official documents providing evidence of a protective alliance between human beings and one or more of the members of the highest echelons of the spiritual hierarchy. Furthermore, it was regarded as essential to strengthen the body's own spirits to be able to deal successfully with outside forces. Treatment of illness in demonological medicine was performed by employing various techniques of exorcism. Just as human enemies were chased away with swords and spears, demonic intruders were driven out of the body by inserting needles, whose shape actually symbolized these human weapons. Other techniques included the use of spells, written or chanted, with the aim of demonstrating to the illness-causing demon that—with support from other spirits—the intruder would be destroyed if he did not leave the human body immediately. Later, during the first centuries of the first millennium, the efficacy of drugs against demons was discovered.

The concepts of demonological medicine mirror the socio-political situation of the time of their emergence. Beginning with the eighth century B.C., China was caught in a political turmoil that it never experienced again. Over a period of six or seven centuries, and accompanied by an almost complete breakdown of the moral order of earlier times, hundreds of states and city-states competed, in an increasingly ruthless struggle, for domination. There is no space here to outline the chaos of these centuries in more detail; the impression received from studying historical accounts of that period indicates that there was a severe lack of existential security for virtually all segments of the population. The bloody fighting occurred not only between political units but also within families. It was a fight of "all against all" until, finally, one state, adopting the most reckless measures against its enemies, overcame its competitors and was able to unite the country under its rule.

The relationships between the concepts of demonological medicine and the socio-political situation before the establishment of a first united empire in China are evident. Just as the existence of man as a member of a political or kinship unit was continuously threatened by very concrete outside attackers, so man's existence as an individual was considered to be threatened by invisible evil forces. Protection and crisis management required similar strategies on both these existential levels, i.e., alliances with third parties, strengthening of one's own troops, and fighting, or calling in of help from outside, once an attack was launched.

A final essential feature of demonological medicine must be pointed out here, that is its amoral nature. With the breakdown of the ancient moral order during this period there seemed to be no ethical standards to guide man through a harmonious existence free from crises. Survival appeared to be guaranteed only by forceful defense and vigorous counterattacks against one's enemies. Similarly, in demonological medicine, personal health was by no means dependent on a specific morality in way of living (as it had been in an earlier therapy system, that is, ancestral healing). Whether a person was a saint or a sinner did not matter; the evil demons attacked everyone alike.

Demonological medicine did not cease to exist with the unification of the empire and with the establishment of central rule in China. It continued to be resorted to by the rural and urban population especially of the lower social strata for whom existential insecurity, due to social and environmental factors, has remained a continuing reality until recent times.

It was the amoral nature of demonological medicine which brought it into severe conflict with the Confucian dogma. Confucianism had also been developed during the period of social and political turmoil described above. Its founders appear to have intended reestablishing a harmonious coexistence of all strata of society by advocating adherence to a well-defined strict code of ethical norms. Adherence to these norms, it was implied, would guarantee both social and physical well-being. Confucian dogmatists thought that the success of this promise, that is, freedom from illness if their moral values were adopted, was threatened by demonological concepts propagating exactly the opposite. Confucians and members of another group, the Legalists, who both believed in the value of government intervention in regulating human affairs, supported, therefore, a very differently conceptualized therapy system, i.e., the system of correspondence based on the theories of yinyang and of the Five Phases. These theories are based on a recognition that the entirety of all phenomena can be grouped in two (according to the concepts of yinyang) or five (according to the concepts of the Five Phases) categories. All phenomena grouped together within one category were considered, in an elaboration of magical notions, to correspond with each other (e.g., sun = red = heat = heaven = east = heart = etc.). Therapeutic manipulation of, for instance, the condition of the heart was achieved by either utilizing other phenomena from the same category (in this case either "yang", according to the yinyang theory, or "fire", according to the Five Phases theory) or by taking advantage of some specific interactions between different categories. It is important to note that the system of correspondence included both rudimentary causal-analytic ideas and advanced magical notions of a wholeness, or interrelatedness, of all phenomena.

Another important concept of this medical system is the idea of "finest matter" (*ching*) and "finest influence" (*ch'i*). The human organism was considered to contain, from its conception, a "finest matter" as its basic life sustaining element. This "finest matter" is lost, for instance, through sexual intercourse and must be replenished continuously. "Finest influences" of matter, originating from many sources, including sun, moon, food, drinks, and seasons among others, were considered essential in supplying the organism with new matter which could then be transformed into whatever the body consists of, including male semen, the purest manifestation of "finest matter" and therefore termed *ching*.

In contrast to demonological medicine, which reflected the sociopolitical conditions of the centuries before the first unification of the empire, the system of correspondence developed as a mirror image of unified China as it was shaped by both Legalist and Confucian administration and ideology. The system of correspondence, in its perception of the human organism, was heavily influenced by the symbolic strength of the new social and economic facts of the empire. Crises in a man's personal physiology, that is, illness, were conceptualized similarly—and often by utilizing the same terminology—as crises in the state economy. Also, appropriate management of these two kinds of crises, both preventive and curative, was considered in equal terms, that is, shaped by Confucian and Legalist world views. The behavioral norms of the Confucian and Legalist social ideologies harmonized with the behavioral norms advocated by the medical system of correspondence. As a consequence, the latter remained the dominant therapy system in scholarly Chinese medical literature as long as the Confucian ideology remained dominant in Chinese society.

Finally, I should like to mention pragmatic drug medicine as a third therapy system developed in China prior to the introduction of Indian medicine. Possibly stimulated by reports from South-East Asia during the third century B.C., Chinese magicians began a frantic search for a "herb of immortality."[2] The quest for substances able to prolong life, or extend it beyond eternity, became one of the domains of Taoism. Just like Confucianism and Legalism, Taoism had been developed during the period of the "Warring States" with the intention of explaining the reasons of the social and political conflicts of the time. The remedy the Taoists came to believe in was antagonistic to the solutions advocated by Confucian and Legalist dogmatists. The Taoists considered harmony a function of an existence in accordance with laws established by nature, not by man himself. The understanding of nature appeared to them an essential precondition for an existence without crisis, on both the social and physiological level. The development of pragmatic drug medicine fitted into this world view very well. Health, in drug medicine, was considered not to be a function of morality in way of living but a function of an existence in accordance with the demands of nature. Transgressions against these demands could be remedied by natural (and artificially produced) substances reestablishing the organism's original state. Pragmatic drug medicine, as propounded in this context, was as amoral as demonological medicine. Accordingly, the system of correspondence ignored the utilization of drugs until the early second millennium A.D. when Confucian dogmatists felt forced to incorporate some Taoist notions into their own world view.[3]

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[2] R. Gordon Wasson, *Soma: Divine Mushroom of Immortality* (New York: Harcourt Brace Jovanovich, 1968), pp. 80-92; Joseph R. Needham, *Science and Civilization in China*, (Cambridge: Cambridge University Press, 1974), Vol. 5, pt. 2, pp. 71-76; Wolfgang Bauer, *China und die Hoffnung auf Gluck* (Munich. C. Hanser, 1971), p. 104.

No space is available here to point out more "tangible" evidence of the links between the social ideologies and the conceptual therapy systems mentioned. What has been said so far might be sufficient, though, to demonstrate that the medical ideologies existing in China at the time of the introduction of Indian medicine were clearly defined in terms of socio-political facts or hoped for realities.

The spread of Buddhism, and with it Indian medicine, in China coincided with the decline of the Eastern Han dynasty (25-220 A.D.). The revolts of the Yellow Turbans and the Taoist state of Chang Lu, as well as numerous less spectacular uprisings during the second century, signaled the approaching demise of what is now called China's "classical antiquity."[4] The unrest and social uncertainty of the transitional period until the reunification of the Empire under the Sui in 589 involved the entire population, once again shaping the intellectual outlook of all segments of society. During the final century of the Eastern Han the rural population had experienced increasing misery, as the formation of large estates and quasi-feudal conditions forced many of them from their lands and into a nomadic existence. These masses provided a willing source for converts to religious Taoism, the influence of which had by no means ended with the destruction of the state of Chang Lu. Even the upper strata of Chinese society did not remain untouched by the intellectual consequences of the decline of the Han order. In the north, where Chinese officials were forced to administer the governments of foreign rulers, the Confucian system of values lost almost all of its binding force. In the south, the inability of the system to protect China from barbarian invasion and the partition of the united empire may have raised doubts about the value of Confucianism as a social philosophy; here, too, non-Confucian currents, especially Buddhism and the macrobiotic Taoism propounded by Ko Hung during the early fourth century, attracted great attention and a large following. As Franke and Trauzettel have pointed out, these trends were accompanied by an increased emphasis on the individual; there were numerous instances of pronounced social non-conformism. "State and Family were no longer the primary concern, but rather the autonomous 'I'."[5]

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[3] Ulrike Unschuld, "Traditional Chinese Pharmacology an Analysis of its Development in the Thirteenth Century," *Isis*, 1977, *68:* 224-248.

[4] Werner Eichhorn, "Bemerkungen zum Aufstand des Chang Chio und zum Staate des Chang Lu," *Mitt Inst f Orientforschungen Deutschen Akad. Wiss* , 1955, *2:* 325-352; Howard Levy, "Yellow Turban Religion and Rebellion at the End of the Han," *J Amer. Oriental Soc.*, 1956, *76·* 214-227, Paul Michaud, "The Yellow Turbans," *Monumenta Serica*, 1958, *17.* 47-127

These historical conditions proved particularly favorable to the Buddhist doctrine, and Buddhism itself had a great influence on the further development of the above-mentioned tendencies. Buddhism was brought to China over south-western trade routes by Central Asian and, occasionally, Indian monks. By about 100 A.D. there were already several regional strongholds of the new doctrine in China. In Lo-yang foreign monks organized the first center devoted to intensive translation of Indian texts. It was through the efforts of these and later "missionaries" that Indian medical concepts and practices were brought to China. The type of health care introduced by Buddhism differed, as we shall see, from purely Chinese systems in that, almost from its very arrival in China, it proved itself to be far more intricate conceptually. The integral tradition of Indian medicine combined secular science with aspects of demonology, mythology, and moral-macrocosmic concepts. Like the medicine of systematic correspondence, Buddhist therapeutics also combined a primarily non-normative science, in particular the doctrine of Four Elements—which in this aspect (but not in substance!) is comparable to the Chinese doctrine of the Five Phases—with ideas that derived directly from the normative

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[5] Herbert Franke and Rolf Trauzettel, *Das Chinesische Kaiserreich* (Frankfurt: Fischer Bücherei, 1968), p. 133

moral system of Buddhist religion. An understanding of Buddhist therapeutic writings in China is scarcely possible without a knowledge of the basic concepts of this religion.

One of Buddha's fundamental insights is the recognition that all life consists of suffering. Birth, growing old, death, separation from loved ones, unfulfilled desires—all this is suffering and characterizes human existence from beginning to end. Only one who is able to escape the endless cycle of rebirth and death and enter an indescribable beyond or nothingness, in which there is no existence as we know it and, consequently, no pain, can achieve salvation. Mortals lack the words to describe this state—nirvana—for man can only comprehend in terms of the categories of good and evil; any such dualism is absent in nirvana. Buddha therefore declined to communicate further details about nirvana.

The long path that leads to enlightenment and, ultimately, to salvation begins with an understanding of the Four Noble Truths, which Buddha revealed in his first sermon: 1) life is composed of suffering; 2) this suffering is caused by the urge to live and the craving for sensual pleasure; 3) a possibility exists to end this pain; 4) this possibility lies in the Eightfold Way: correct views, correct intentions, correct speech, correct behavior, correct living, correct effort, correct attitude, and correct concentration. Buddha summarized his ethics in the following imperative: "Do no evil; perform good deeds and purify the spirit!" Every action is evil, he explained, that harms others, harms oneself, or harms both others and oneself. Correct speech is the avoidance of lies, slander, and insults. Correct behavior is characterized by one who does not kill, steal, and who lives a chaste life.

Gautama's teachings led first to the establishment of monastic communities, in which each member sought individual salvation. The immediate goal was to become an Arhat, a "holy man" who has successfully discarded all passions and thus achieved full control over his life. The figure of the Arhat appears as a cold, passionless ideal, a man who has eliminated all appetites and who, outside human society, dedicates himself to a private religious life organized solely for personal benefit. The prerequisite, then, was the renunciation of all ties to family and state. The accumulation of meritorious *karma* was restricted to those who had performed the appropriate good deeds; the possibility of a transferral of positive *karma* to less fortunate persons was not yet present in early Buddhism.

Even before these teachings reached China, a second sect—the Mahayana version—arose in Indian Buddhism. The religious ideal of this doctrine, a doctrine based on belief in and devotion to Buddha and love and compassion for all mankind, was the bodhisattva. The bodhisattva, a being already destined for salvation because of his inexhaustible wealth of positive *karma,* nevertheless postpones his transition to nirvana, in order to assist those unfortunate souls unable to accumulate any positive *karma* for themselves. The bodhisattva has the power to enable the needy to partake of his *karma.* Of the numerous persons from antiquity active as bodhisattvas later on, Avalokitesvara probably has the most significance for health care. Avalokitesvara—known in Chinese Buddhism since the seventh century as the Goddess of Mercy, Kuan-yin—is constantly searching with a thousand eyes for sufferers whose misery he is able to alleviate with a thousand hands.

For centuries, educated Chinese considered the new doctrine only a new variant of religious Taoism. According to legend, Lao Tzu had disappeared in the west near the end of his life, giving credence to the notion that he subsequently reappeared there as Buddha. Chinese Taoists soon assisted in the selection and translation of Buddhist texts, a situation that had significant influence on the terminology of early Chinese-Buddhist literature.

Soon after the beginning of missionary activity, and still during the Han period, Buddhism in China experienced a first conceptual expansion. The original Indian concept of an endless chain of rebirths, occurring without a soul to provide successive existences with the appearance of individual continuity, was revised in China by the idea of an eternally indissoluble soul, which each time during the ongoing process of reincarnation was provided with a different mortal shell. Additional divergent interpretations of the original doctrine soon followed, each accompanied by the establishment of corresponding movements and sects and literary genres.

The political division of China into a northern half, ruled by barbarians, and into various southern, Chinese dominated dynasties, also split Buddhism. In some of the northern regions it took a form resembling state religion, characterized by chauvinistic attitudes that required action for the benefit of the state; in the south, Buddhist religion assumed a more fundamentally educational nature.

I have already pointed out that Buddhist therapeutics, like the medicine of systematic correspondence, combined primarily non-normative scientific insights with normative conceptions generated by the moral system of Buddhist religion. A comparison of the norms of the medicine of systematic correspondence with those reflected in Buddhist therapeutic literature reveals an obvious parallel to the well-known saying of Hsiao Tzuhsien (489-537) in his history of the Southern Ch'i Dynasty: "Confucius and Lao-tzu were primarily concerned with the order of this world; for Shakyamuni, the most important goal is the abandonment of this world!"[6]

The norms reflected by Buddhist medicine are directed exclusively towards release from individual suffering; unlike the medicine of systematic correspondence, they reveal no feature of an ideal earthly existence or harmonious society. This situation was not changed by the so-called altruism of Mahayana Buddhism, with its advocacy of compassion towards all mankind, or by the prohibitions of killing, theft, and other harmful actions that were derived from Hinayana doctrine. Each individual was merely provided with a list of ethical commandments; compliance would eventually lead to release from the cycle of suffering caused by birth and death. Wolfgang Bauer has accurately summarized these basic tenets in Buddhism:

> It is apparent that this intellectual climate afforded scarcely any room for the design of ideal societal models. It was useless for a world already doomed to suffering to construct temporary solutions, solutions that simply could not achieve those eternal values without which no ideal can exist. What is the purpose of an ideally functioning system of government, what use is a happy existence under conditions where a monk who had cast off all the ties and pleasures offered by family and state was widely perceived as being the closest to ultimate salvation; where religious fanaticism, as persistent Confucians frequently complained, even included self-mutilation in the hope for salvation in another world?[7]

The urgent efforts for salvation from individual suffering, even including quite tangible bodily pain in case of illness, as well as the lack of normative structures that could have supported a specific social system, may have contributed to the ease with which Buddhist literature combined diverse secular and pre-Buddhist non-secular systems of Indian medicine into a simple conglomerate of differing concepts. Numerous works of non-Buddhist literature in China, at least since the T'ang period (618-906), similarly combine regulations and arguments adopted from a variety of available systems of ideas. It was not unusual for the same author to recommend several remedies for a specific ailment, some borrowed from pragmatic drug medicine, some from demonology, and some from the medicine of systematic correspondence, or even Buddhism. But the authors of such compilations were practitioners concerned solely with providing their readers a spectrum of prescriptions which might be efficacious. I have called attention to this conceptual diversity in Buddhist literature because it is Buddha himself, the creator of the dogma, who is credited with therapeutic eclecticism. I know of nothing similar in any other religion or world view.

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[6] Hsiao Tzu-hsien, *Nan-Ch'i Shu*, ed. Chung-hua shu-chü (n p., n.d.), p. 933

[7] Bauer, *China*, p. 222.

According to the dominant secular-scientific theory in Chinese Buddhist literature, the body was composed of four elements—earth, water, fire, and wind. The *Ratnakutra* offers the following commentary:

> 1. Earth comprises all that is solid in the human body. This includes hair, nails, teeth, skin, flesh, muscles, bones, spleen, kidneys, liver, lungs, intestines, feces, bladder, membranes, brain, etc.
> 2. Water comprises all that is fluid in the human body. This includes tears, perspiration, nasal mucus, saliva, pus, blood, marrow, milk, urine, etc.
> 3. Fire comprises all that is fiery or warm in the human body. This includes the entire digestive system.
> 4. Wind comprises all that is in motion in the human body. This includes the winds in the four limbs, in the five parts of the body, inhalation and exhalation, etc.[8]

Illness arises when one or more of these four elements is increased or decreased excessively. As a result of such disharmony, each individual element can be responsible for 101 afflictions, so that according to this theory a total of 404 afflictions are possible.

The *tri-dosa* theory of Ayurveda medicine was also introduced to China from India, but it never achieved there the influence and respect it commands to this day in its native land. While the terms earth, fire, water, and wind were easily translatable into Chinese, the three *dosa* apparently posed significant difficulties. No single definition exists in the Chinese-Buddhist canon for the concepts wind, mucus and bile, which have been equated with various terms in various Chinese texts. The term *dosa* itself was translated by the Chinese *tu* ("poison") which only insufficiently conveys the original meaning of "deficiency," "defect."[9] The concept of the four "elements," too, which later was usually rendered as *ta* ("large") or *chung* ("seed," "kind") for the Sanskrit *mahabhuta,* initially suffered a shift in meaning in a Chinese text from 230 A.D. with the translation *ping* ("illness"). It is possible that the notion of the four-part elementary composition of the body was so foreign to the Chinese, who—and here it is necessary to recall the initial interconnection of Buddhism and Taoism—adhered to the conception of finest matter *ching,* that the choice of *ping* was an attempt to establish a relationship with the more familiar ideas of the causes of illness. The imprecision resulting from such terminology can be seen in the following passage of the sutra "Ch'i-ch'u san-kuang ching," which was translated into Chinese as early as 151 A.D.:

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[8] Sylvain Lévi, ed., *Hôbôgirin* (Tokyo Maison franço-japonaise, 1929), p. 225

[9] Paul U Unschuld, "Zur Bedeutung des Terminus *tu* in der traditionellen medizinisch-pharmazeutischen Literatur Chinas," *Sudhoffs Archiv,* 1975, *59,* 165-183

> I became aware of the following. Once, while staying in Sravasti, Buddha went for a walk in Jetavana Park. There he spoke to the monks: Shih-chien yu san ta ping. Jen-shen ko tzu yu. Ho teng wei san. I wei feng. Erh wei je. San wei han. Shih san ta ping.[10]

Here the Chinese terms *ta* and *ping* are combined. Buddha's remarks could be translated as follows, and in the manner that would certainly have been most obvious to an impartial Chinese reader:

> In this world there are three grave illnesses. All appear independently in the human body. What are they? The first is (caused by) wind; the second is (caused by) heat; the third is (caused) by cold.

If, however, we recall that "mucus" in the *tri-dosa* doctrine was occasionally translated with *leng* ("cold") and "bile" with *je* ("heat"), it is possible to view this text as an erroneous interpretation of a *tri-dosa* statement that utilizes terminology from the four-elements doctrine. The passage could then be translated as follows:

> In this world there are three elements (= deficiencies, *dosa*). All are present in the human body from the very beginning. What are they? The first is wind; the second is bile; the third is mucus.

The text then continues:

> Monks are familiar with three remedies for these three "grave illnesses" (or *dosa*). If a monk is stricken with the "grave illness" of wind, hemp-oil or hemp-oil-like (medications) are essential remedies. If he has been stricken with the "grave illness" of heat, butter-cheese or butter-cheese-like (medicines) are important remedies. If he has been stricken with the "grave illness" of cold, honey or honey-like (medications) are important remedies. These are the three "grave illnesses" and the three essential remedies of the monks.
>
> Human beings suffer from three more afflictions, with which they grow up and live and which are detected by ethical measures. What are they? The first is desire; the second is anger; the third is ignorance. Monks are familiar with three important remedies for these three "grave illnesses." When a monk has been stricken by the "grave illness" of desire, the only significant medication is (the consumption of) his own excrement and meditation. He who is stricken by the

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[10] Junjiro Takakusu and Kaigyoku Watanabe, eds , *Taisho Tripitaka* (Tokyo: Society for Publication of the Taisho edition of the Tripitaka, 1924-1932), Vol 150, p 882.

"grave illness" of anger must practice universal compassion. Reflection on the ultimate origin and causality of all things is the essential medicine for one who has been stricken by the "grave illness" of ignorance. These are the three remedies for the three "grave illnesses" of the monks. Thus spoke Buddha!

Towards the end of the sixth century one author combined these and other concepts recorded in Buddhist literature into a six-part etiology, which differentiated among:

1. illness caused by disharmony among the four elements;
2. illness caused by unbalanced nutrition;
3. illness caused by excessive meditation;
4. illness caused by demons;
5. illness caused by evil gods (Mara); and
6. illness caused by improper conduct during a previous existence.[11]

Accordingly, there were various types of appropriate therapy. These were: for illness from categories one and two: medicinal and dietetic measures; for illness from category three: an improvement of ascetic and meditative routine, as well as close regulation of breathing; for illness from categories four and five: amulets, incantations, introspection; and for illness from category six: introspection, confession, contrition and penitence.

The incantations (*dharanis*) recommended to combat demons—which continually attack the viscera—and evil gods—which confuse the senses—appear in Chinese translations beginning in 230 A.D.

Buddhist monks provided medical treatment for the inhabitants of their host country for a great variety of reasons. In addition to the ethical obligation to provide assistance to all men, the missionary value of such action was recognized early and is mentioned as a reason for therapeutic activity. Fo-t'u-teng (fl. 310-349), for instance, realized that the tenets of his religion were too profound for the rulers in the small state of Shih Lo (later Chao) to appreciate fully. He therefore repeatedly demonstrated his knowledge and the value of his teaching through diverse magical and clairvoyant activities, including raising of the dead, rain spells, and predictions of the future.[12]

At the institutional level, Buddhists participated in various charitable actions and institutions. As a result of their influence, the alien dynasty of the Northern Wei (386-534)—which had converted to Buddhism—established grain reserves to relieve the suffering of the population. It was not unusual for convents and monasteries to incorporate dispensaries for the treatment of lay patients. At the instigation of the Empress Wu, a supporter of Buddhism at the time, these "hospitals" were even assigned to a special department during the period *ch'ang-an* (701-705). Although frightened civil servants—citing Confucius who had criticized his pupil Tzu-lu for wanting to use his possessions for the benefit of the poor—attempted to rescind such official protection, the hospitals even survived for a time the extensive wave of secularization of 845 A.D. None of these activities, however, made a lasting impression on the Chinese public health system. This is also true for the "charitable apothecaries" (*hui-min yao-chu*) established by the state during the Sung (960-1279), a scandal-ridden and limited program that never achieved more than a brief significance. With the decline of Buddhism to a popular religion (*Volksreligion*) during subsequent centuries, official interest in such charitable organizations also seems to have died out. Not until the widespread appearance of Christianity during the nineteenth century did the integration of missionary and medical activities by a foreign religion reemerge in China, accompanied once again by the establishment of significant numbers of hospitals.

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[11] Lévi, *Hôbôgirin*, p 257.

[12] A F. Wright, "Fo-Thu-Teng a Biography," *Harvard J. Asian Studies*, 1948, *11* 321-371

Medical concepts introduced to China by Buddhist literature followed a similar course. Of the six-part etiology reproduced above, only illness caused by disharmony among the four elements, excessive meditation, and improper conduct during a previous existence were completely new. While it is not difficult to understand that meditation- and *karma*-etiology remained restricted almost exclusively to Buddhist writings, it may at first seem surprising that even the doctrine of the four elements did not play a significant role in scientific-medical discussion in China. The only author influenced by such concepts was Sun Szu-mo (561-662?). He is repeatedly cited in Western secondary sources as an example of the purported Buddhist influence on Chinese medicine. But no mention is made of the fact that Sun Szu-mo had no followers in this respect. In subsequent centuries, Buddhist concepts of retribution appear only in discussions of medical-ethical problems;[13] occasionally, an author added a Buddhist incantation to his collection of prescriptions. The four-elements theory—from our point of view the most significant—had, as far as can be determined from available sources, only a negligible impact on the secular-medical literature of China. We can only guess as to why this completely unknown doctrine, which argued that the body was composed of different material elements, met with such a lack of interest in China. Perhaps the cultural gap was simply too great, or the attempts to bridge that gap too cursory, for a genuine reception to have taken place. Sun Szu-mo's text, reproduced below, tends to support this conclusion. In the first sentence the concept of the four elements is introduced with desirable clarity, indicating that a faithful presentation of the doctrine is to follow. But Sun Szu-mo immediately incorporates the foreign concepts into Chinese notions of the influences to which all men are subject, thereby removing any attraction these ideas may have had as an alternative. Moreover, the author also included the Five Phases of Change (*wu-hsing*) in his short presentation:

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[13] Paul U. Unschuld, *Medical Ethics in Imperial China: A Study in Historical Anthropology* (Berkeley and London: University of California Press, 1979), pp. 44-53

> As it is written in the commentaries of the Buddhist sutras, man is composed of earth, water, fire and wind. Whenever the influence of fire in man is not in perfect harmony (with the other influences), vapor and heat arise in the body. Whenever the influence of wind is out of balance, the entire body is extended and all pores are blocked. Whenever the influence of water is out of balance, the body swells up and breathing becomes heavy, gasping and raw. Whenever the influence of earth is out of balance, the four limbs are immobile; the voice is silent. When fire disappears, the body becomes cold. When the wind subsides, the (flow of) influences is interrupted. When the water dries up, so too does the blood. When earth is dispersed, the body bursts. Yet ignorant physicians do not take into account the pulse and treat afflictions in a completely incorrect manner. Thus, they cause the five phases of change to destroy one another in the granaries and interrupt (the circulation of the influences). This is the same as pouring oil on a burning fire (that one wishes to extinguish)! Great care must be taken! When all four influences are in balance, then all four spirits are also in harmony. If one influence is out of balance (with the others) 101 illnesses are caused. If all four spirits are disturbed, 404 illnesses arise at the same time. It is also said that there are 101 illnesses that disappear without treatment, 101 illnesses that require treatment to be cured, 101 illnesses that are difficult to cure even with treatment, and, finally, 101 illnesses that are fatal and are not treated.[14]

In a later chapter Sun Szu-mo returns to the existence of 404 illnesses. In his efforts to reconcile this concept with the Chinese cycle of five, he does not even hesitate to incorporate a mathematical inaccuracy:

> There are four types of illness. These are: first, paralysis caused by cold; second, illness caused by (malevolent or unbalanced) influences; third, malevolent winds; fourth, poisoning by heat or hot poisons. When the patient has calmed down and has returned the influences to a state of harmony through the methods described here, none of the illnesses will remain uncured. All possible illnesses are

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[14] Sun Szo-mo, *Pei-chi ch'ien-chin yao-fang* (Taipei, 1965), p 3

> connected with one of the five granaries. In each granary 81 kinds of illness are caused by cold, heat, wind, and influences. This makes a total of 404 illnesses. He who wishes to be knowledgeable must understand these relationships.[15]

Sun Szu-mo's interest in the four-elements doctrine remained an insignificant footnote in the history of Chinese medicine. The same is true for the possibly legendary figure of Hua T'o (110-207), whose successes in surgical practice are reminiscent of similar reports of achievements by the Indian physician Jivaka.[16] He, too, had no successor to carry on his art; the frequent references in Chinese and Western secondary literature to Hua T'o's work as early examples of surgery and anesthesiology present a distorted picture of the actual significance of such practices in China.

T'ao Hung-ching (452-536), the renowned Taoist and author of medical works, wrote a supplement to the prescription collection *Chou-hou fang* of Ko Hung (281-341) entitled *Chou-hou pai-i fang* ("Prescription handbook enlarged by 101 prescriptions"). In a preface dated 500—the only portion of the work that has survived—the author acknowledges Buddhist influence. Additional evidence is provided by certain titles in the bibliography of the Sui Dynasty (589-618), compiled in 636. Some of the therapeutic works listed there contain the characters *Po-lo-men* in their title, which most likely stands for "Brahman". Among the texts, for instance, is one entitled *Po-lo-men yao-fang* ("Medicinal prescriptions of the Brahmans"). But as little survives from this work as from another long-lost title from the list that indicates a knowledge of "Western," i.e. Indian medical men: *Hsi-yü ming-i so-chi yao-fang* ("Important Prescriptions Collected by Renowned Physicians of Western Lands").[17] Only purely religious elements of Indian medicine gained a foothold in China, developing into an important component of the total spectrum of medical care available to the population. Even today, Buddhists continue to pray for salvation from bodily suffering to the goddess Kuan-yin, i.e., Avalokitesvara. Buddhist oracular medicine is still prevalent wherever Buddhist doctrine is able to develop unimpeded. Receptacles in the temples contain numbered wooden slips, which the faithful draw out unseen after an appropriate prayer. The number drawn refers to a prescription also kept in the temple, a prescription followed as a direction of the bodhisattva.

To summarize, the arrival of Buddhism offered China, through certain concepts of Indian medicine, an opportunity to become familiar with the analytical views of the body and the world that ultimately, in the Occident, led to modern science. But for various reasons, conditions were unfavorable for the reception of these ideas. Attempts in China to awaken an understanding for the Indian doctrine of the elementary structure of the organism were evidently much too superficial, and, consequently, the analytical beginnings remained unshakeably rooted in categories of magic correspondence and wholeness. An important aspect inherent in Buddhism should not be overlooked as a possible cause for the failure of Indian concepts in China, namely its therapeutic tolerance. In contrast to numerous other world views that promote a specific medical system because the latter manifests, on the level of health care, the socio-political values proclaimed by the former, the Buddhists were completely unconcerned about which medical practices relieved their physical suffering. Success—the release from suffering—was the decisive criterion and not, as in other systems, the specific methods that led to this success.

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[15] Ibid. p. 483

[16] Lévi, *Hôbôgirin*, p 264

[17] Tameto Okanishi, *Sung-i-ch'ien i-chi k'ao*, (Taipei: Ku-t'ing shu-wu, 1967), pp. 567-568.

INWARD VISION & OUTWARD GLANCE: THE SHAPING OF THE AMERICAN HOSPITAL, 1880-1914*

CHARLES E. ROSENBERG

It is natural for us to see the hospital as central to the provision of medical care, to medical education and to clinical investigation. For historians concerned with such matters, it is equally natural to see the hospital as reflecting in its evolution and present shape all those factors which have made the modern world modern—increases in scale, the dominance of professional elites and bureaucratization of human relationships, the tendency toward technological approaches to social problems, the legitimation of social roles and policies in terms of that technology. Contemporary social criticism has made this image familiar indeed.

Inasmuch as these clichés reflect reality, it is a relatively recent one. A century ago the hospital was still a marginal aspect of medical care (though already significant for the ambitions of elite urban physicians). Even in the nation's largest cities, dispensaries and the hospitals' own outpatient divisions treated a far greater number of the poor than were ever admitted as inpatients. In 1873, the first American hospital survey located only 178 hospitals (including mental institutions), containing a total of less than 50,000 beds.[1] Only a few of these institutions were consistently hospitable to medical school instruction—while in none was research an explicit commitment.

In a nation of some forty million, this comparative handful of hospitals provided only a small proportion of the medical care Americans received. Not only did the hospital serve a marginal role in the delivery of care, it was in its internal structure a far different institution from that which has become familiar to us in the twentieth century.[2] It was no monolith, certainly not one dominated by the medical profession and its needs. Lay

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[1] J. M. Toner, "Statistics of Regular Medical Associations and Hospitals of the United States," *Trans. Amer. Med. Assoc.*, 1873, *24* 287-333.

[2] The following conclusions are drawn from Charles E. Rosenberg, "And Heal the Sick: The Hospital and Patient in 19th Century America," *J. Social History*, 1977, *10* 428-447

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trustees still felt it their duty to oversee every aspect of its internal life. Physicians could do little to intervene in the patient's biological reality and almost as little to shape the quality of life on the ward. Nurses and attendants could not be presumed to identify with medical men and medical values and available therapeutics could ordinarily do little to alter the course of a patient's illness or the quality of his hospital experience. Stays were lengthy and most inpatients were not critically ill; keeping moribund patients alive was simply not an option. The hospital's internal social atmosphere might more usefully be likened to that of a home for the aged than to our contemporary image of the hushed hospital ward populated largely by the severely ill and the post-operative. The recruitment of patients, nurses, and attendants also helped shape the hospital's internal order. Drawn almost exclusively from a social class—and often from ethnic and religious groups—widely different from those of trustees and medical staff, patients, nurses and attendants helped shape a hospital sub-culture in many ways sufficient unto itself and not easily amenable to control by formally constituted authority.

Much of this had changed substantially by the first decade of the twentieth century. The hospital itself had become far more central both in the provision of medical care and in the careers of ambitious physicians. In 1909, a census of American hospitals listed 4359 with 421,065 beds (a total which did not include mental or chronic disease hospitals).[3] Not only had the hospital become more widely distributed throughout the United States, it had become a potential recourse for a much larger proportion of Americans; the respectable and prosperous as well as the indigent might be treated in hospitals, frequently by their regular physicians. The hospital had become an institution easily recognizable to late twentieth-century eyes. It had grown in size, become more formal and bureaucratized, increasingly monolithic in authority structure and more consistently reflective of medical needs and perceptions. All this had come about without dramatic conflict, without formal planning or even informal concert, but within a set of social perceptions, economic relationships and professional values which dictated a pattern of development as precise as anything that might have resulted from formal planning.

These developments reflect, at least in retrospect, a clear and consistently understood vision. The vision looked inward toward the needs and priorities of the medical profession, inward toward the administrative needs of the individual hospital, inward toward a view of the body as mechanism and away from that of the patient as social being and family member. It was a vision, moreover, so deeply felt as to preclude conscious planning, replacing it instead with a series of seemingly necessary actions.

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[3] E. H L Corwin, *The American Hospital* (New York: Commonwealth Fund, 1946), p. 8.

The decisions which shaped the modern hospital cannot be understood without an understanding of the peculiar world of medical ideas and values, what might be called the culture of medicine. It has become fashionable in recent years to see medical self-conceptions as best explicable in marketplace terms. And obviously economic realities do explain a good deal of that which we see in past medical behavior; individuals do not ordinarily act in ways contrary to their perceived economic interest. But interest cannot be understood in economic terms alone. The formal values of medicine were not simply a means of legitimating demands for control of the therapeutic marketplace. Why did at least some early nineteenth-century physicians work long hours to perform autopsies and publish their results? master an increasingly elaborate clinical literature? treat large numbers of indigent patients without thought of fee? Such behavior is not comprehensible in purely material terms. The honor accorded innovation, the satisfaction of intellectual competence in a world of pervasive mediocrity, for example, are meaningful compensations—if perhaps no more transcendent than dollars and cents (and possibly more self-deluding). One can hardly understand the evolution of the hospital without some understanding of the power of ideas, of the allure of innovation, of the promise of healing, of the amelioration of painful and incapacitating symptoms through an increasingly hospital-based technology. This was the ethos of a medical community as eager to establish its own legitimacy as a profession with formalized standards of achievement as to increase its wealth. The self-consciousness which accompanied this emerging professionalism encouraged a necessarily inward vision among those aspiring practitioners concerned more with the establishment and definition of their own particular role than with any larger social context.

The ethos of the medical profession elicited change as it defined behavior. The germ theory, antiseptic surgery, immunology, and the X-ray were evidences of that change and seeming proof of the value of medical aspirations. That there could be conflict between the specific demands of the medical culture and other needs of human beings rarely occurred to those physicians who dominated hospital medicine. And, given a long-standing governmental unwillingness to intrude in the delivery of care, the needs and outlook of medical men and the attitudes and financial needs of lay trustees shaped the early twentieth-century hospital; it would be an institution which looked necessarily inward.

As we shall see, there were advocates among late nineteenth- and early twentieth-century physicians and administrators for a hospital oriented toward community need. An understanding of the patient's social environment, such critics contended, was necessary to a full understanding of both the cause of sickness and appropriate therapeutics. But this view was not to prevail. Those aspects of late nineteenth-century institutional medicine not centered in the hospital's wards—the independent dispensary and the hospital's own outpatient facilities—actually decreased in significance for the medical world as the hospital and its inpatient service grew increasingly prominent both in the culture of medicine and in the delivery of medical care.[4]

Despite our late twentieth-century assumption that the hospital is a necessarily central social institution, we know little—aside from its most general aspects—about the evolution of American hospitals between the Civil War and the first decade of the twentieth century. We do not have a good general history of the American hospital; we do not even have a study presuming to fulfill such a need. We do, on the other hand, have a good number of chronicles of particular hospitals. Yet even the most dogged and monumental of these are by intent monuments to far-seeing philanthropists and discerning clinicians.[5] This is hardly an accident; nor is it happenstance that such histories are written from a narrowly internal perspective. This inward looking historical canon is entirely consistent with the hospital's evolution. It is only to be expected that we should have numerous histories of hospitals, but no history of *the* hospital in America; to write about the hospital is to see it as a social institution; to write about *an* hospital is ordinarily to chronicle its internal development. Most hospital histories, logically enough, even those of recent vintage, define their scope in terms of the accomplishments and dedication of skilled clinicians and the adoption of an increasingly elaborate technical armamentarium. And, of course, the building of buildings.[6]

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[4] For a more detailed discussion, see Charles E. Rosenberg, "Social Class and Medical Care: The Rise and Fall of the Dispensary," *J Hist. Med.*, 1974, *29* 32-54. The most valuable full-length study of the dispensary is still that by Michael M Davis, Jr. and Andrew R Warner, *Dispensaries Their Management and Development* (New York: Macmillan, 1918) See also George M. Rosen, "The First Neighborhood Health Center Movement—Its Rise and Fall", *Am. J. Public Health*, 1971, *61* 1620-37.

[5] We have no synthesis of American hospital history comparable to Brian Abel-Smith's *The Hospitals, 1800-1948 A Study in Social Administration in England and Wales* (Cambridge, Mass. Harvard, 1964) The studies by Corwin and Davis cited in the previous footnote, as well as a general study by the Commission on Hospital Care, *Hospital Care in the United States* (New York. Commonwealth Fund, 1947), provide useful overviews. There have been several significant recent monographs by professional historians: Morris Vogel, "Boston's Hospitals, 1870-1930: A Social History" (unpublished dissertation, University of Chicago, 1974), Vogel, "Patrons, Practitioners and Patients: The Voluntary Hospital in Mid-Victorian Boston," in Daniel W. Howe, ed., *Victorian America* (Philadelphia University of Pennsylvania, 1976), pp. 121-138, David Rosner, "A Once Charitable Enterprise: Health Care in Brooklyn, 1890-1914" (unpublished dissertation, Harvard University, 1978), and William H. Williams, *America's First Hospital· The Pennsylvania Hospital, 1751-1841* (Wayne, Pa.· Haverford House, c 1976) have been extremely useful, especially Vogel's work, which emphasizes the period covered in this essay and evaluates many of the same issues. I have also benefited from Vogel's generous advice and counsel. See also Leonard K. Eaton, *New England Hospitals, 1790-1833* (Ann Arbor, Mich.. University of Michigan, c 1957) For prominent examples of the older variety of hospital history, see: Nathaniel T. Bowditch, *A History of the Massachusetts General Hospital . Second Edition, with a Continuation to 1872*

This paper will concern itself with the years of transition between 1880 and the First World War. Obviously these few pages cannot pretend to comprehensiveness. They will instead emphasize certain areas of change and conflict. One is the shifting pattern of authority within the hospital, and especially the changing relationship between lay and medical administrators. Second, is the role of inpatient as opposed to outpatient care and the place of both in the interaction between hospital and medical profession. Third, is the conscious discussion of policy options as understood by contemporaries.

Decisions and Decision-makers

At no time in the nineteenth century was the hospital dominated by one group or one point of view. It was a creature neither of physicians nor laymen. Physicians had played a key role in the organization and shaping of America's earliest hospitals and dispensaries. And lay trustees, though they might oppose specific demands of medical staff members, always conceded a general legitimacy to the claims of medical education; opportunities for clinical training had been an explicit aim in the founding of all our pioneer hospitals. Yet lay authorities throughout the late eighteenth and first half of the nineteenth centuries maintained a secure control over hospital policy and personnel.[7] To do less would have been a denial of

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(Boston: Trustees of the Massachusetts General Hospital, 1872), Thomas G. Morton assisted by Frank Woodbury, *The History of Pennsylvania Hospital* (Philadelphia: Times Printing House, 1895).

[6] Social historians, on the other hand, have with few exceptions ignored the general hospital as a subject for inquiry The growth of social and institutional history in the past decade coupled with an increasingly sceptical attitude toward medical men and institutions, has fostered a flourishing interest in medical history among academic historians Thus far, however, psychiatry and the mental hospital have received more attention than the general hospital.

[7] This was normally exerted by a sub-committee of the lay board, styled variously the attending, visiting, or inspecting committee whose members would visit the hospital once or twice a week to oversee

their responsibility as stewards. Through this day to day commitment, community values and perceptions necessarily played a prominent role in shaping hospital realities.

Perhaps the most helpful way of looking at authority within the nineteenth-century American hospital is to imagine a feudal division of responsibility, with conflict implicit in the differing perceptions of laymen and physicians—a conflict, however, ordinarily suppressed by the institution's very fragmented quality. But a word of caution is necessary. Authority within the hospital should not be seen in entirely dichotomous terms, medical as opposed to lay. Day to day life on the ward was dominated—as has been suggested—by a "third force," the hospital sub-culture of patients, nurses, and attendants—laymen certainly, but differing significantly in attitudes and origin from the trustees who retained formal control. There is, nevertheless, analytical purpose in emphasizing the continuing conflict between lay trustees and physicians. If we do, a marked shift toward an increasing role for medical men and medical perceptions is to be seen even in the first three-quarters of the nineteenth century. In its last decades this shift was to become far more dramatic.

The conflict must not be seen as simply a series of trivial squabbles between individuals with differing perceptions yet an equal desire to shape the institution to their will; it was ultimately a conflict between two cultures. In most respects, physicians' way of life and world view were no different from those of the laymen who served on hospital boards of trustees—or those less secure members of the middle class who served as hospital stewards or superintendents. All were drawn from a similar social background and often shared religious as well as class identity. But as members of a profession, staff physicians were provided with peculiar values, peculiar ways of behaving, peculiar ways of achieving a legitimate status within that profession. For ambitious and well-connected young physicians, the hospital had played a central role throughout the nineteenth century (though it played little or no role in the education or subsequent career of most ordinary practitioners).

Historians of medicine emphasize the sketchy quality of medical education in the first half of the nineteenth century and especially its lack of

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its workings and admit patients. This was true of both voluntary hospitals and municipal almshouse hospitals. In Charleston, for example, the Commissioners of the Almshouse served in rotation as a "Weekly Committee" to visit at least twice a week If they discovered "any disobedience, immorality or irregularity" such lapses were to be reported to the full board. Minutes, December 18, 1828, Charleston Almshouse, South Carolina Historical Society, Charleston clinical training. Though these strictures probably do apply to the education of the vast majority of American physicians, they do not describe the opportunities available to the prosperous and ambitious. These young men were able to pay the preceptorial fees demanded by their generation's leading practitioners (many of whom enjoyed hospital appointments and the teaching privileges which normally accompanied them).[8] After completing their apprenticeships, they were able to compete for the scarce and unpaid hospital resident physicianships. Many such young men studied in Europe as well, creating an ad hoc but demanding course of clinical education—one based on the guidance of a skilled preceptor, hospital residence, and European training.

Though leading urban physicians did not pursue their private practice in the hospital, and while most did not contemplate the kind of clinical investigation recognizable as research today, the hospital nevertheless remained central to their ambitions. First, the hospital was, as has been suggested, a key locus for the teaching of clinical medicine. Second, hospital and dispensary physicianships allowed young medical graduates to accumulate needed clinical experience in a period when there were no formal residency programs, no specialty boards, and no certification examinations. Insofar, moreover, as a physician's standing was related to scholarship (not research advisedly, but scholarship in the sense of mastering an existing clinical literature and the integration of that literature with clinical experience) a hospital attending post meant the opportunity for acquiring that experience, the opportunity to perform "important" operations for a surgeon or to describe and treat obscure and critical ills for a physician. Novel operations or challenging cases could be written up and published and thus provide hospital physicians with valued intellectual credentials. Perhaps most importantly, in a society with few formal attributes of medical status—no government grants, endowed chairs, memberships in national academies or board certifications—a hospital attending position was (along with a medical school professorship) the most significant badge of professional achievement.

These professional needs implied specific demands within the hospital. And such demands might often clash not only with the trustees' personal desire for control, but with their sense of what constituted an appropriate stewardship. In the generations before the 1880s, such conflicts appeared and reappeared in a number of predictable areas: conditions for medical instruction and student access to patients, admissions procedures, control of autopsy policies, staff discipline and performance—even disagreement over seemingly technical aspects of therapeutics.

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[8] In the eighteenth and early nineteenth century, apprenticeship was still a normal part of medical training, even for those would-be physicians who also attended formal medical lectures. Only those preceptors with hospital appointments as visiting or attending physicians could offer their students access to the hospital's wards Such prominent urban physicians were able to demand the highest preceptorial fees.

The most frequent conflicts developed and reenacted themselves over medical education and its impact on patient care—and patient dignity. Trustees of both private and municipal hospitals consistently objected to an excessive amount of student contact with patients. When the Massachusetts General Hospital sought in 1824 to attract students it warned that they could be admitted to its wards only with the understanding that they "carefully abstain from any gesture or remark which may tend to alarm the sick." They could examine patients only with specific authorization from the attending surgeon or physician. "It is obvious that the greatest inconveniences must arise, if such examinations are commonly made by the pupils." "There are rights possessed even by the recipients of charity," Philadelphia's Board of Guardians of the Poor emphasized in 1845, "which should be guarded, and feelings which should be respected."[9] The hospital's youthful residents needed careful supervision in their relationships with Philadelphians in the almshouse hospital.

Yet at the same time, all these ante-bellum hospitals tolerated clinical teaching programs, limited and unsatisfactory as such opportunities may have seemed to many physicians. The pupils of visiting physicians at the New York Hospital, for example, served as "walkers" and "dressers" in its medical and surgical wards; at other hospitals, the pupils of visiting physicians could attend clinical lectures and "witness the practice" on the wards without paying a fee. Students at neighboring medical colleges were, however, required to pay a fee to attend clinical lectures at the hospitals; but the fees were modest and they could and did attend. Even at the Philadelphia Almshouse hospital, where the struggle between politically-oriented lay managers and medical school teachers was most intense—and where all teaching was banned for a dozen years at mid-century—special lecturing facilities had been arranged as early as the 1820s and small clinical wards for medical and surgical cases established in proximity to the clinical amphitheater, wards in which cases for "demonstration" could be chosen by the lecturers.[10] The relationship, in other words, between lay and medical authority, was complex. Lay trustees at all the hospitals felt called upon at times to circumscribe teaching, though they rarely challenged the necessity of clinical instruction as such.[11] Physicians could still less plausibly question the authority of lay trustees, but nevertheless sought ever-expanding teaching opportunities. Thus the recurrent quibbles over the number of students to be admitted to wards, their bearing and decorum while in the hospital, and the right of patients to refuse to serve as "clinical material."

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[9] Massachusetts General Hospital (Hereinafter, MGH), *The Subscribers . . rules for the Admission and Conduct of Pupils. May, 1824* (Boston: The Hospital, 1824), circular signed by James Jackson and John Collins Warren; Charles Lawrence, *History of the Philadelphia Almshouses and Hospitals . . .* (Philadelphia: The Author, 1905), pp. 156-157. For a similar action by the Pennsylvania Hospital, limiting students, see Minutes, Board of Managers, October 27, 1845, Pennsylvania Hospital Archives (Hereinafter, PHA).

The logical connection—logical in twentieth-century terms—between medical school teaching and clinical appointments in hospitals was never accepted by nineteenth-century trustees. They were jealous of their appointing powers and thus another conflict endemic in pre-bellum hospitals inevitably developed. Without a hospital appointment, a medical school professor could not lecture in its amphitheater or demonstrate cases on its wards. Some hospitals and medical schools did have special relationships—Harvard and the Massachusetts General Hospital, the

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[10] The Filed Papers of the Board of Governors, New York Hospital Archives (Hereinafter, NYHA) contain numerous testimonials documenting the network of association suggested here. For their formal rules, see: *An Account of the New York Hospital* (New York Mahlon Day, 1820), p 24. At the Philadelphia Almshouse Hospital (later Philadelphia General Hospital), a "clinical ward" was established in 1823, but it was not until 1830 that the Guardians of the Poor granted patients the right to refuse to be used in clinical instruction. Minutes, Board of Guardians of the Poor, February 1, 1830, Philadelphia City Archives (Hereinafter PCA). As late as 1877, the Hospital Committee of the Board forbade staff physicians to take more than four students through the women's medical wards at one time. Board of Guardians, Hospital Committee, Minutes, March 23, 1877, PCA. In the late 1830s and 40s, eight house physicians paid $250 per annum for room and board and the right to practice at the Almshouse Hospital In 1845, as a result of conflict between Board and House Staff, the Board changed the length of appointment to two years, reduced the number of physicians to six, and reduced fees to $75 per annum (without board) so as to encourage the less affluent to apply For a more complete account of lay-medical relationships at the Philadelphia Almshouse, see Priscilla Clement, "The Response to Need: Welfare and Poverty in Philadelphia, 1800-1850" (unpublished dissertation, University of Pennsylvania, 1977), chs. 6 and 9. See also J. Howe Adams, *History of the Life of D. Hayes Agnew* (Philadelphia and London. F. A Davis, 1892), pp 109-112, D. Hayes Agnew, "The Medical History of the Philadelphia Almshouse," in John W. Croskey, ed., *History of Blockley A History of the Philadelphia General Hospital from its Inception, 1731-1928* (Philadelphia: F. A. Davis, 1929), pp. 34-35.

[11] In part because it promised benefits to the entire community, not just those few who found themselves in hospital beds. "Those physicians," as MGH trustees put it in 1822, "to whom necessity compels us to entrust the lives of our wives and children, do not witness patients for the first time in our chambers nor apply their first remedies to those whose health is so precious to us." *Address of the Trustees of the Massachusetts General Hospital, to the Subscribers and to the Public* (np, nd [Boston· The Hospital, 1822]), p 22. The "us" who were potential patrons of the Hospital were clearly not those who would be treated in its wards.

Pennsylvania Hospital and the University of Pennsylvania—but even here conflict over appointments might arise. The fact that a man had been appointed professor in a medical school did not, trustees emphasized, create any obligation on their part to parallel that appointment with one as attending physician. And if trustees felt it inappropriate to have choices dictated to them, physicians on their part made it increasingly clear that they considered it inappropriate that laymen hold so much power over professional matters.[12]

In cities in which more than one medical school competed for students, access to hospital facilities constituted an important element in that competition.[13] Those medical schools without established ties to hospitals, such as Jefferson in Philadelphia or the Medical Department of the University of New York, demanded clinical privileges at least approximating those enjoyed by their more established peers. In none of the cities, however, did the hospitals and their lay trustees provide access to clinical facilities equal to the demands of local medical schools. "A necessary connexion," as one medical school teacher contended as early as 1822, "must . . . subsist between Colleges and Hospitals in order to form a complete system of medical education."[14] Not surprisingly, urban medical schools had by mid century begun establishing their own dispensaries, even advertising for patients in an effort to provide clinical instruction. As early as the 1840s, for example, the University of Pennsylvania established its own dispensary with a few inpatient beds. Finally, in 1874, its School of Medicine was able to open the Hospital of the University of Pennsylvania—a concrete response to the desire of medical school faculty members for a hospital genuinely under their control, one which could be used both for teaching and as setting for a portion of their private practice.[15] This was a significant date in the history of both the hospital and medical education in America.

[12] For an example, see Stephen Smith, "Hospital Appointments," *Doctor in Medicine. And other Papers on Professional Subjects* (New York. William Wood, 1872), pp. 247-50.

[13] Mid-century students often discounted didactic teaching, but still flocked to urban medical schools for the city's clinical opportunities. "I do not expect to gain much," as one medical aspirant put it in 1842, "by an attendance on the lectures in the medical school; but I anticipate much instruction from the Dispensaries and hospitals " John Knox to Richard Eppes, September 14, 1842, Section 59, Eppes Family Papers, Virginia Historical Society, Richmond

[14] William Hamersley to William Bayard, Misc. Ms., New York Historical Society, New York, New York. Origins of this assumption can be demonstrated much earlier, even in Britain's North American colonies

[15] For a description of the crude dispensary of the 1840s, see Henry H. Smith to Bishop Potter, January 4, 1849, in [Episcopal Hospital of the City of Philadelphia], *Appeal on Behalf of the Sick* (Philadelphia.

Lay trustees also came into conflict with medical staff members as they sought to impose what seemed a proper discipline on their physicians. Throughout the century, senior attending physicians might prove themselves unreliable in appearing at stated visiting hours (even though such physicians rotated their tenure of responsibility, holding terms of three or four consecutive months in the year). It was difficult, however, for trustees to enforce hours of attendance on the senior physicians, especially since such men were prominent and influential in their own right. As if to make up for this failure of discipline, trustees sought all the more energetically to control the behavior of those fledgling practitioners who served as resident house staff. In their unquestioned view of themselves as stewards of an institution populated and staffed by moral and economic minors, lay trustees felt strongly that young physicians must submit to their authority. This meant in practice that house officers had to accept the surveillance of a lay superintendent, ask permission to leave the hospital building, and observe by-laws which forbade drinking, gambling, and the most casual socializing with nurses. Not surprisingly, young men of twenty or twenty-two often found such restraints confining and came into conflict with superintendents, matrons, or ward nurses.[16] The reaction of lay authorities was often to chastise physicians and not their lay antagonists.

Even appropriate therapeutics might serve as an occasion for conflict between lay and medical authorities. Though trustees did not ordinarily presume to judge the effectiveness of particular drugs or surgical procedures, they felt it entirely within their competence to evaluate the economic and moral aspects of the physician's accustomed practice. A particularly long-standing conflict developed, for example, around the traditional medical use of alcohol as a stimulant and tonic. From the 1820s until the end of the century, staff members had to withstand the sometimes vigorous opposition of lay trustees to their use of alcoholic beverages; if

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Lindsay & Blakiston, 1851), pp. 41-42 and for a general account of the University Hospital and its origins, see George Corner, *Two Centuries of Medicine. A History of the School of Medicine of the University of Pennsylvania* (Philadelphia and Montreal· J. B. Lippincott, 1965), pp. 133-153 Mid-century hospitals, on the other hand, often resented the aggressive recruitment of patients by medical school clinics See, for example, Statement of John Watson, Report of a Committee of the Governors, New York Hospital, Filed 1858, pp 10-11, NYHA.

[16] For examples of such conflict, see Board of Governors Exec Comm., Minutes, March 1, 1897, NYHA; Hospital Comm , Board of Guardians, May 21, 1858, August 28, 1874; October 19, 1883, October 8, 15, 24, November 5, 1886, PCA, House Officers to Trustees, June 11 and June 8, 1903, Trustees' Documents, Box 1, MGH Papers, Countway Library, Boston.

alcohol was so destructive to man's health, the argument followed, how could it help restore that health once impaired? Economic considerations, however, more frequently than temperance qualms led to the questioning of therapeutic practice. In several pre-bellum institutions, for example, physicians were warned against the use of costly leeches to draw blood; the lancet had served well enough in the past. At other times, lay committees were required to approve lists of drugs to be made available for hospital and dispensary practice. At mid century, such watch-dog committees often questioned an increasingly lavish use of beef tea and other dietary supplements.[17] In 1845, for example, a sub-committee of the New York Hospital's Board of Governors bemoaned the use of "very expensive medicine & in quantities which have not been used—and a prodigal use of Lint & Leeches." They did not, the report concluded, "intend to cast . . . censure upon the resident Physicians & Surgeons. Ardent young men," it seemed, "in the pursuit of Science are not likely to be very careful of expenditure."[18]

Though less picturesque, admissions procedures illustrate perhaps most clearly the gradual redefinition of authority within the nineteenth-century hospital. At the beginning of the century, responsibility for admissions was in reality as well as legal form in the hands of laymen. Trustees appointed small subcommittees which met—usually twice a week—at the hospital to evaluate all applicants for admission (and, in the case of accidents or emergencies, to determine whether the patient might be allowed to remain). Thus it was natural for even the eminent Benjamin Rush to assure a friend that he would appear before the Pennsylvania Hospital's visiting committee and plead the case of a prospective candidate for admission; Rush could not unilaterally admit a patient, even though he was an attending physician at the Hospital.[19] Subscribers or annual contributors might as a condition of their support nominate patients for admission; in effect such laymen controlled access to a bed for all or part of a year. Similarly, in outpatient dispensaries, a written testimonial from a contributor might be necessary before a poor man could receive medical attention.[20] One's social place as well as biological state determined hospital admission. Not only the assumptions of deference and stewardship implicit in the trustees' admission power, but their willingness to exert that power—personally and in circumstances which must in many cases have been onerous—guaranteed that the hospital's patient population would not be determined by medical criteria alone. The early nineteenth-century hospital was a traditional welfare institution—one dedicated primarily to the amelioration of need and dependence and shaped as much by general social perceptions of these problems as it was by peculiarly medical needs and capabilities.

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[17] On pressure to reduce the amount of alcohol administered, see, among many such examples, Board of Physicians, Minutes, June 18, 1821, April 4, 1831, Board of Guardians Records, PCA, Hospital Committee, Minutes, October 24, 1884, Board of Guardians Records, PCA; Richard Cadbury to De Forrest Willard, February 5, 1885, Superintendent's Letterbooks, PHA. For attempts to reduce the number of leeches employed, see: Minutes, February 15, 1836, Board of Guardians, PCA, Medical Staff to the President and Managers, Boston Dispensary, [February 1844], Boston Dispensary Papers, Countway Library of Medicine, Boston. Outpatient physicians were often limited to a handful of drugs and in one instance at least told that they must issue no more than a single prescription per case Minutes, June 30, 1887, Executive Comm., Board of Governors, NYHA.

[18] "The Committee to whom was referred the subject of the increasing expenditure of the Hospital, . . .Report, February 4, 1845," Filed Papers, Board of Governors, NYHA Cf. also, Charles Starr to Visiting Committee, January 6, 1845 in which Starr, the Hospital's Superintendent, blames "the doctors, consulting the wishes rather than the necessities of the patients," for increasing costs. Filed Papers, Board of Governors, NYHA.

The categories of clinical diagnosis were only one among several factors determining admission at private hospitals. (The municipal or almshouse hospitals were the legatees of all those cases deemed unacceptable by private institutions. Within the almshouse, however, ward designations reflected categories such as morality and ability to work in addition to medical diagnosis, while admission itself had ordinarily to be approved by lay welfare administrators as well as staff physicians).[21] Until mid century, significantly, most American hospitals did not have a specific location devoted to the physical examination of prospective patients; admission was a process which took place as much in social as in physical space.[22] As late as 1858, the New York Hospital would still not admit patients without a trustee's personal authorization.[23] The shift to an admission procedure in which lay trustees intruded only occasionally, but assigned their responsibility instead to medical men and the seemingly universalistic categories of medical nosology was well underway by the 1870s, though it was not to approach completeness until the twentieth century.[24]

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[19] Benjamin Rush to Ashbel Green, April 26, 1803, L H. Butterfield, ed , *Letters of Benjamin Rush* Two vols. (Princeton. Princeton University for the American Philosophical Society, 1951), *2:* 863.

[20] At the New York Dispensary, for example, annual subscribers giving five dollars had the privilege of "recommending" two patients at a time; anyone donating fifty dollars was awarded the privilege for life. No patient was to be treated without a signed certificate from a subscriber. New York Dispensary, *The Charter and By-Laws of the New York Dispensary* (New York: Van Winkle and Wiley, 1814), p 11

[21] Rosenberg, "And Heal the Sick," 432; Cook County (Illinois) Hospital, *Rules and Regulations June, 1868* (Chicago: Republican Job Printing Co., 1867), p. 15; Minutes, June 22, 1837, Hosp. Comm., Board of Guardians, PCA.

[22] Minutes, June 14, 1848, Hosp Comm., Board of Guardians, PCA, Medical Staff to Board of Governors, August 30, 1844. Filed Papers, Board of Governors, NYHA; Minutes, November 6, 1850, Board of Governors NYHA.

[23] The unwieldiness of this procedure was already apparent to contemporaries. New York Hospital, *Report of the Committee of the Board of Governors appointed to Enquire into the Practicability of Extending the Usefulness of the Hospital* (New York: Baker & Godwin, 1858), pp 12-13. Staff members

Less significant in terms of the hospital's day to day realities, but nevertheless revealing as to underlying attitudes, were sporadic conflicts with regard to post-mortem and autopsy policies. The very recurrence of such disputes illustrates the potential for conflict in the differing imperatives of lay and medical cultures. Physicians sought throughout the century to enjoy liberal autopsy regulations, ones which would allow the performance of post-mortems in ambiguous or interesting cases; trustees sought to enforce regulations which would minimize the possibility of offending the late patient's family—and thus the community generally. Their primary responsibility, as lay trustees understood it, was to provide medical care for a particular constituency. Popular fears that the hospital was a place where patients would be experimented upon while alive and dissected after death obviously interfered with the carrying out of that responsibility. Physicians, on the other hand, contended that the advancement of medical knowledge justified the occasional discomfiture of a particular patient's family. Such arguments recurred regularly in the history of every large American hospital; though the circumstances might differ, the conflict itself remained essentially unchanged, for it reflected the same underlying differences between lay and medical perceptions.[25]

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complained that this cumbersome procedure drove patients to other institutions Admission policies often brought conflict between physicians and moralistic trustees. Cf. J. Marion Sims to Theresa Sims, January 24, 1855, J Marion Sims Papers, Southern Historical Collection, Chapel Hill, Willard Parker, Notes on Hospital Practice, Entry dated May 16, 1875, Rare Book Department, New York Academy of Medicine; Thomas B. Hall to Norton Folsom, Resident Physician, January 25, 1876, Folsom to Hall, January 25, 1876, "Admitting Office File," MGH Archives In the last-mentioned incident, the MGH trustees had ruled that no cases of "pure and simple inebriety" be admitted. The Resident Physician objected, pointing out that failure to treat acute symptoms might well lead to death—as sometimes happened in police cells where drunkards died without treatment

[24] The free bed policy of the late nineteenth century constituted something of a transition device. As late as 1890 for example, the New Haven Hospital allowed the donor of $5,000, his heirs and assigns to nominate patients to a free bed for one-hundred years or during the lives of any three persons the donor might nominate. New Haven Hospital, *Sixty-fourth Annual Report, 1890,* p 7. As late as the first decade of the twentieth century, many hospitals still allowed trustees to admit patients by written order. Cf Lakeside Hospital (Cleveland), *Thirty-second Annual Report, 1898,* p. 5; Presbyterian Hospital (New York), *First Annual Report, 1869,* p 14.

[25] Rosenberg, "And Heal the Sick," p 436, "Autopsies File," MGH Archives, Williams, *America's First Hospital,* p. 46; Minutes, March 27, May 22, 1828, Committee on Poor House, Alms House Records, South Carolina Historical Society, Charleston; Lawrence, *History of the Philadelphia Almshouse,* p. 158;

The medical ethos dictated a vision fixed inward toward the body as mechanism and toward the profession; lay attitudes looked outward toward the place that body had occupied in society. Each saw their particular imperatives as legitimate and neither view entirely dominated the nineteenth-century hospital.

Significantly, the arguments of physicians who sought unfettered access to patients for teaching purposes, were strikingly similar to those justifying demands for liberal autopsy procedures. The particular patient was not as important, the argument followed, as the lessons his illness might impart to student physicians.[26] The momentary inconvenience of an individual patient was a small price to pay for the increased clinical competence which a whole class of students might later apply in practice (often, it was contended, in rural areas where opportunity for observing obscure cases was infrequent). Hospital care and medical education were inextricably related. As J. C. Warren explained this deeply felt medical assumption in 1845:

> Medical treatment at the hospital alleviates the sufferings of some one or two hundreds of persons who, from year to year, resort to its wards, but the advancement of medical science confers important benefits upon the community at large, and every individual, throughout the extent of our land, who becomes the victim of disease or accident, directly participates in them.[27]

Thus stated, the social benefits of clinical teaching far outweighed any problems it might create.

And, the argument almost invariably continued, patient care, assuming that it could be disentangled from patient dignity, would necessarily be of higher quality in a teaching institution. "Experience has proved," a New York Hospital staff committee explained to their Board of Governors in 1842, that physicians were more "apt to do justice to their poor patients"

Minutes of Physicians, September [18], 1815, October 7, 1822, May 2, 1825, December 30, 1828, March 1, 1829, Board of Guardians Records, PCA Minutes, July 23, 1875, September 26, 1884, Hospital Comm., Board of Guardians Records, PCA.

[26] Towards the end of the century, the prerogatives of research figured increasingly prominently in medical arguments "The hospital," as an MGH staffer put it in 1894, "has a duty to the future as well as to the present generation . . . No one could have predicted the future of sulphuric ether in 1845, nor is it possible to foretell at this period, what bearing the disclosures made by a single autopsy may have upon the lives of thousands in years to come. . . ." H. A Beach to W. S. Bigelow, February 15, 1894, H. A. Beach Biographical File, MGH Archives.

[27] Statement of J C Warren to Henry B. Rogers, Frances C. Lowell, and Charles Amory, Committee, "Report on a Lying-In Department, October, 1845," "Obstetrics Department File," MGH Archives, Cf. "Report of the Physicians and Surgeons on the Subject of Clinical Instruction . . Hugh Hodge, et al." December 29, 1845, Box 155, PHA.

when they knew they were being observed. This argument was restated monotonously throughout the last half of the nineteenth and into the twentieth century: the highest quality of patient care could only be maintained in teaching hospitals; attending physicians would have to be constantly alert, less prone to careless or routine practice as they labored under the critical eyes of young house officers and medical students.[28]

Sources of Change and Forms of Control

The years between 1880 and the first decade of the twentieth century constituted a period of administrative transition for the American hospital. Lay trustees increasingly limited their personal involvement. The older assumption that every detail of patient care might receive their legitimate attention seemed hardly a plausible option in the larger urban hospitals. In the twentieth century, trustees no longer felt it their place to discipline resident physicians, interview nurses, sample the house diet, or determine the necessity and financial conditions of each admission. Prospective trustees could be reassured that their responsibilities would be largely financial, limited to raising funds and perhaps attending a monthly luncheon in an appropriately panelled board room.[29] Individual trustees might still involve themselves in particular conflicts or in regard to particular staff appointments—but such paternalistic intrusion was no longer the routine method of arriving at such decisions. Medical men still resented the lingering power of lay trustees and their frequent unwillingness to allow medical men to sit on their boards, but must in reality have been aware of the increasing aloofness of lay trustees from the hospital's daily routine.

A number of interrelated factors had helped bring about these new administrative realities. One was financial. Voluntary hospitals had always depended largely, though not exclusively, on private contributions and, especially after the difficult years of the early 1890s, trustees found their economic responsibilities demanding enough to absorb all their available energy and commitment. Allied to this financial exigency was a parallel increase in hospital size and fixed costs. Immigration and the steadily increasing size of American cities meant increasing numbers of potential patients unable to employ private physicians; for such urban workers nursing and sickroom space were as elusive as a doctor's fee. As costs mounted, trustees sought both to decrease expenditures and increase income; almost inevitably they turned to the fees of private patients as a means of balancing chronically straitened budgets.[30] Given the determination of private boards to maintain their autonomy—and the general unavailability of public funds—such calculations were a necessity; how else could a private hospital control spiralling costs except by establishing an appropriate ratio between pay and charity cases? In accepting the need for private patients, moreover, hospitals necessarily conceded an increasing influence to those staff physicians whose referrals and reputation were needed to fill private beds. Second, increasing size and a parallel growth in bureaucracy within the institution placed formal and inevitably self-conscious and self-interested layers of reassuring experts between the trustees and the hospital's wards. To define trustee responsibilities in financial terms alone seemed by the beginning of the present century a prudent, even moral division of authority. Finally, an increasingly elaborate level of technical and intellectual capability underscored the seeming necessity for medical autonomy within the institution while at the same time increasing the hospitals' costs. Clinical laboratories, X-ray apparatus, and more sophisticated surgical facilities inflated hospital expenses as they changed the hospital's public image. To alert and ambitious physicians, the hospital was becoming the only appropriate place for the highest level of clinical practice. Their patients gradually came to share this view. To laymen the hospital seemed an increasingly specialized and imposing place but one in which the laudable mystery of healing might in many cases alone take place.

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[28] Valentine Mott, John Revere, and J. W. Draper, to the Council of the University of the City of New York (copy), February 18, 1842, Filed Papers, Board of Governors, NYHA. Cf. Hospital of the Women's Medical College (Philadelphia), *Third Annual Report, 1907,* p. 8, Philadelphia Polyclinic Hospital, *Seventh Annual Report, 1889,* p. 25, Lakeside Hospital (Cleveland). *Thirty-second Annual Report, 1898,* p. 92

[29] "A trusteeship," a prospective member of the Philadelphia Polyclinic Hospital Board was assured in 1907, "involves no obligations save when it is possible, attending the Board meetings on the third Tuesday of each month." Board to "Mr. Anderson," copy, January 7, 1907, Polyclinic Hospital Papers, Archives of the University of Pennsylvania, Philadelphia.

In 1874, the year the Hospital of the University of Pennsylvania opened its doors as one of America's first university-controlled hospitals, its already aged and honored peer, the Pennsylvania Hospital, instituted a seemingly trivial, but in retrospect significant, change. Its Board of Managers appointed a medical Officer of Hygiene to inspect the Hospital, ward by ward, and report on its condition.[31] No longer would a sub-committee of the trustees walk methodically from floor to floor, approve invoices and verify admissions. Like all its sister institutions, even the conservative and atypically patriarchal Pennsylvania Hospital had evolved far from the personal stewardship exerted by its trustees at the beginning of the century.

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[30] MGH, for example, found its income increasing from $123,251 in 1891 to $136,997 in 1894, while its expenses increased from $135,656 to $178,924. By 1896, the trend was such that the trustees felt that they must limit expenses to balance their budget even if it meant closing wards. "If we prove ourselves bad economists we shall lose the confidence of our friends. They will not give money which appears to be wasted." Edmund Dwight to J. C. Warren, Visiting Staff Correspondence, Box 1, MGH Papers, Countway Library. In his study of Brooklyn hospitals in the late nineteenth and early twentieth centuries, David Rosner has particularly emphasized the impact of economic crisis in the 1890s in shifting hospital policies.

Perhaps most significant in this shift was the redefining of the superintendent's role; for it was his intermediary and managerial presence which became central in the gradual delimiting of trustee authority. By the turn of the century, superintendents of the nation's largest hospitals had come to think of themselves as professionals, competent in a new and highly challenging discipline. Up to the Civil War, however, hospital superintendents had normally been men of wide business experience (if of no great success); only infrequently was it assumed that they should have had previous institutional experience.[32] Their wives still routinely served as matrons, overseeing the domestic work—the hospital's cleaning, cooking, laundering—as a competent wife would her husband's home. By 1900, the superintendent of a large urban hospital had to deal with an already complex world of economic realities—purchasing, accounting, labor management—and this within an ever more intricate organizational structure.

Both medical and nursing staff, for example, presented a very different aspect from that which they had assumed at mid century. In the larger hospitals, attending medical staff members had organized themselves into boards and in some of the largest into separate medical, surgical, and outpatient units. Their staff meetings provided a unified platform for the formulation of medical goals and needs. Changes in nursing were even more dramatic. Nursing now constituted its own "estate," represented in organizational terms by a superintendent of nursing eager to control her own nursing staff and act as intermediary between trustees, medical staff, and hospital superintendent. The nurse training school, moreover, had by the end of the century become almost universal in American hospitals of any size; in some ways it was a financial necessity. For the unpaid labor of student nurses had become indispensable if the hospital was to balance its books.[33] Even the hospital's physical plant had become larger and more complex; by the turn of the century, the skilled work of electricians, plumbers and steam fitters, the maintenance of elevators and electric ambulances meant new problems and new kinds of personnel relationships for the hospital superintendent.

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[31] Minutes, Board of Managers, May 25, 1874, PHA.

[32] Attempts to monitor administrative matters by trustee committees—even through daily or weekly visits—would in the new-model hospital inevitably become an empty form. A single resident executive must be chosen, the superintendent of the Johns Hopkins Hospital urged, and this must be predicated upon a rejection of the traditional view "that any person who has failed in business or has become superannuated for any reason becomes thereby fitted to be a hospital superintendent " H. M. Hurd, "Hospital Organization and Management," *University Medical Magazine*, 1897, 9 494.

Many hospitals sought to solve the problem of a divided authority and minimize conflict between lay and medical views by hiring a full-time salaried physician as "chief resident"; he would be responsible for purely medical administration, while a lay superintendent or administrator exerted the trustees' responsibility over routine financial and personnel matters. Most of the large hospitals, however, attempted to centralize administrative responsibility in the hands of one individual, usually a layman. Ordinarily, organizational wisdom endorsed the policy of what came to be called "dual management," the separation of lay from medical areas of control, with lay trustees assuming responsibility for the institution's economic well-being, and medical boards for matters relating to admissions, therapeutics, and house staff discipline.[34] This did not protect the hospital from occasional internal friction, especially between superintendent and medical staff, but did tend to keep such conflict within the institution.[35] Even in municipal hospitals, administrators and medical staff exerted an ever-increasing autonomy. The combined influence of an increasingly bureaucratized structure and the removal of lay trustees from day to day intervention in the hospital implied an institution increasingly inward looking; one less and less amenable to pressures originating outside the institution itself and beyond the culture of medicine.[36]

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[33] Ratios of one graduate to ten student nurses were typical in large hospitals at the turn of the century

[34] The physician's power within the wards was, in particular, viewed as absolute "When a physician is authorized to cross the threshold of the Ward, he is vested with authority, . . The resources of the hospital are at his disposal, and from assistant and nurse he has the right to expect that submissive obedience which full sympathy alone can insure . ." N. P. Dandridge, *Hospitals. their Work and their Obligations* . . (Cincinnati· Robert Clarke, 1893), p. 10. For the "dual management" consensus, see W. L. Estes, "Hospital Management," *National Hospital Record,* 1900, *3*. 4-5, Editorial, "The Relations of the General Committee and Medical Staff of a Hospital," Ibid., 1899, *2*· 12. Some medical men sought to resolve the problem of conflict between lay and medical authority by the election of medical men to the general board, but this was not accepted with universal enthusiasm

[35] The superintendent might remain formally subordinate to the trustees, but, as one editorialist explained, he was not without weapons: "the tactful superintendent may do much in educating the board to the proper understanding of the needs of the hospital " "From the Publisher's Point-of-View, Educating the Trustees," *National Hospital Record,* 1904, *7* 6-7. A strong superintendent would, at the same time, seek to limit medical autonomy by—among other means—keeping physicians from membership on governing boards. As tough-minded George Rowe, long-time superintendent of the Boston City Hospital put it "The average medical man is an educated gentleman, a delightful companion, a man of parts, and many such are our best friends: but doctors, when associated in corporate matters, tend to be too self-seeking. With an eye out for their profession, they are inclined to be aggressive, and naturally, under such conditions, are not a gracious, peaceful, easily co-operative body of men." "Observations on Hospital

As the superintendent became more self-consciously professional, the relationship of the physician to the hospital changed as well. This hinged, as we have suggested, on two related developments. One was the increasing technical resources of the profession, the other the parallel increases in the financial demands made upon the hospital's traditional sources of voluntary support, demands which could be met only by finding new benefactors or enforcing a prudent ratio of paying to indigent patients.[37] Most of the larger hospitals pursued both options.

Not surprisingly, all of the older voluntary hospitals had by the 1890s begun to seek increased numbers of private patients. The only major exception to this policy was the small, conservative, and still Quaker-dominated Pennsylvania Hospital, which stated explicitly that its resources were to continue to be devoted primarily to the poor and not to the well-to-do who had, by the 1880s, an assortment of private hospitals among which they might choose. The Massachusetts General Hospital also experienced a late nineteenth-century split between those physicians and lay trustees who sought to increase private bed utilization and those staff members who thought this inconsistent with the Hospital's social

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Organization," *National Hospital Record,* 1902, *5:* 4. Many medical staffers at Boston City Hospital reciprocated Superintendent Rowe's distrust, noting his well-honed ability to steer a delicate course between medical and trustee demands. Boston City Hospital, Record of Surgical Staff, Meeting of February 1, 1908, BCH Archives.

[36] It would be no difficult task, of course, to find isolated examples of a vestigial paternalism, of a continued willingness of trustees to intervene even in matters seemingly medical. Physicians might still be suspended or even discharged as a result of patient complaints; trustees might still intervene on behalf of favored patients, in occasional cases they chastised physicians for inhumanity toward patients or chronic tardiness. The youthful indiscretions of house officers still demanded discipline; the penchant of resident physicians for alcohol and the occasional destruction of furniture seems to have been endemic.

[37] In April of 1899, for example, St Luke's Hospital in Chicago instituted a policy whereby the total number of free cases would not exceed half that of "full pay patients." In the years immediately following, the Hospital was consistently able to show a small surplus. *Thirty-sixth Annual Report, 1898-99, Thirty-eighth Annual Report, 1900-1902,* p 70. Newly established voluntary hospitals made it clear that although they did not hope to make a profit, they could only admit that number of "worthy and impecunious patients, as their resources from paying patients and their endowments will permit." In the great majority of cases endowments were small or non-existent. Lane Hospital (San Francisco). *First Annual Report,* 1894-95, p. [1]. Certain small—and many pioneer denominational—hospitals had always employed less generous ratios. St Joseph's Hospital in Philadelphia, for example, accepted one free for every five paying patients in mid century. Episcopal Hospital of Phila., *Appeal on Behalf of the Sick,* p 4

mission. In newer hospitals and away from the more tradition-oriented East Coast, the emphasis on paying patients was never questioned.[38]

Indeed, most hospitals established in the late nineteenth century were founded on the assumption that a major portion of their operating budget would come from private patients. Significantly as well, almost all had to provide elaborate private bed facilities before they were able to achieve a satisfactory level of occupancy. Hospital publications emphasized not only their superior clinical facilities, but the comfort and convenience of their rooms and the attentiveness of their resident staff. No hotel suite, particularly enthusiastic administrators gushed, could offer more comfort than their private hospital rooms did.[39] A few municipal hospitals attempted similar tactics in an effort to attract paying patients; but competition was hardly equitable, for the city hospitals never escaped the almshouse stigma. Thus, for example, the Cincinnati General Hospital each year advertised its ability to provide rooms for the most fastidious, where patients who could not be treated at home might be attended by their own physicians. But occupancy rates remained discouragingly low. Increasing pressures for ward space forced the hospital to convert its private rooms to wards and in 1903, finally to abandon the hope of attracting private patients.[40]

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[38] Cf Richard Cadbury to Mrs J. D. Armstrong, March 30, 1885, Superintendent's Letterbooks, PHA As early as 1905, even the comparatively well-endowed MGH collected $74,539.20, nearly one-third of its operating expenses, from private patients. George Day, "Abuse of Medical Charity," *Boston Med. & Surg. J*, 1905, *152*· 297. The "Phillips House" file in the MGH Archives documents the conflict over private patients

[39] See, for example, the comments of Louis R. Curtis, Superintendent of St. Luke's Hospital (Chicago), "The Modern Hotel-Hospital," *Trans. Amer. Hosp. Assoc.*, 1907, *9* 132-38. Hospital publications sought to emphasize the non-institutional aspect of their private rooms and suites. Philadelphia Polyclinic Hospital, *Twenty-fifth Annual Report, 1907*, p. 45, Mercy Hospital (Pittsburgh), *1906-08 Annual Report*, p. 6. In Richmond, Virginia, for example, in 1901 the new Charlotte William Hospital—exclusively for whites—was to have one wing of the H-shaped building devoted entirely to private patients All its rooms were to have open fire places and the wing itself a separate entrance and sun porches on each floor. A pathology laboratory and consultation area for visiting staff were to be included as well as a special corridor designed so that medical students might go directly to the clinical amphitheater and not disturb private patients. Dean's Annual Report to Board of Visitors, Minute Book, Board of Visitors, pp. 290-291. Archives, Medical College of Virginia, Richmond.

[40] From 1883 on, the Cincinnati General Hospital's annual reports had emphasized the availability of its facilities for private patients. "Strangers or other persons of means," they suggested, "overtaken by illness, and wishing to avail themselves of the best appointments for proper care, can here find refuge without the sacrifice of any of their liberties." Patients might even employ a private physician of their choice. *Annual Report, 1883*, p 4. But in the next few decades, private bed occupancy rates were uniformly discouraging In 1890, for example, the daily census of free patients averaged 292.1 and private 6.6, in 1893, 293.9 and 7.6, in 1895, 395 6 and 7.7. For the closing of the private ward, see *Annual Report, 1903*, p. 10. Charity Hospital in New Orleans similarly experimented with a pay ward, but closed it even

These new realities implied a new kind of relationship between visiting staff and hospital. It was a relationship of mutual accommodation and dependence—and one in which the hospital became inevitably more central not only to the ambitions of the prominent physicians who treated the rich (and dominated hospital attending physicianships and medical school appointments), but to an increasingly large number of urban physicians generally. As early as the 1890s, a few prominent and enterprising urban surgeons had begun to limit their practice to the hospital; they were still only a few but, at least in retrospect, an influential few.[41] Thus a symbiosis between physician and hospital had begun to develop well before the publication of the Flexner Report (1910), the movement for formal hospital accreditation, and the systematic incorporation of American hospitals into a reformed pattern of medical education. In this case at least, formal procedures merely reflected and intensified already established economic and institutional relationships.

Not surprisingly, many physicians found this growing dependence on the hospital a convenient, profitable, and honorific pattern. There were some exceptions, however; not all medical men were pleased with these developments. Among the dissatisfied were attending physicians at that minority of hospitals which refused to allow staff members to accept fees for treating inpatients. Equally unhappy were those physicians denied admitting privileges in major urban hospitals; by the time of the First World War, the denial or limitation of such privileges had already become a controversial issue in a number of cities. Finally, there were the least prosperous and least well educated physicians who could not aspire to admitting privileges and who saw all of institutional medicine as an unfair and undemocratic mode of competing for patients.

The Massachusetts General was the hospital most conspicuously and atypically unwilling to allow its physicians to accept fees for treating inpatients. Despite rising costs in the 1890s, some of its trustees and

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earlier—in 1892—as providing more nuisance than income. Charity Hospital, *Annual Report, 1892,* pp. 12, 35.

[41] In 1894, for example, Nicholas Senn, Chicago's most prominent surgeon, could explain to J. Collins Warren that he enjoyed "continuous service" at St. Joseph's and Presbyterian Hospitals (that is, he did not serve a three or four month tour of duty). "It is here I earn my daily bread," he elaborated, "because I have not the time to operate in private houses. This arrangement is a great help to the hospitals as it brings them wealthy and influential patients who later show a deep interest in their prosperity " Senn to Warren, February 28, 1894 In a letter of transmittal to the Trustees' Secretary Edmund Dwight, Warren noted that· "Dr. Senn is one of the most prominent men in the country. He told me recently he 'paid no visits'. He is said to have an income of $75,000.00 a year." Phillips House File, MGH Archives.

certain Brahmin attending physicians held fast against this intrusion of materialism into what they saw as a fundamentally charitable enterprise. In the course of a sometimes bitter internal debate, it became apparent that the Massachusetts General represented a small minority among contemporary hospitals; perhaps even more significantly, it became apparent as well that its own visiting staff members were sending their private patients to other hospitals, institutions in which physicians could accept payment for professional services.[42] Far more typical, even among older institutions, was the New York Hospital which not only built special rooms for private patients at the turn of the century, but moved to extend admitting privileges to certain non-staff physicians who might provide private referrals. At the same time it adjusted rates so as to keep them competitive with New York's other private hospitals.[43] In many less prestigious voluntary hospitals, the private patients of any regularly licensed practitioner were welcome and the physician was allowed to treat them and charge whatever fees seemed to him appropriate.[44] By 1910, an older practitioner could complain that hospital trustees had ceased to evaluate staff members on the basis of their skill, but judged them instead on the number of patients they could attract.[45]

By the First World War, in short, the role of American hospitals had changed drastically. The private patient was becoming part of the hospital's normal patient population and an important factor in balancing its accounts.[46] The hospital was becoming a significant locus for urban medical practice; hospital treatment had become a plausible option for well-to-do patients. A generation earlier their counterparts would not have entered a general hospital under any circumstances. In smaller communities, physicians and medical societies allied with local men of affairs to organize their own hospitals; even in such small cities and towns, a hospital had begun to seem a necessity to the practice of medicine.[47] The hospital itself was becoming increasingly unified, and insofar as it was, consistently informed by medical needs and perceptions. Though still unquestioned in their legal control of most voluntary hospitals, lay trustees now exerted that control indirectly and through well-understood bureaucratic channels.

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[42] In 1894, the Trustees circulated a letter of inquiry among medical staff members and the Phillips House File in the MGH Archives contains the responses. Vogel, "Boston's Hospitals," contains an illuminating analysis of this incident and its context.

[43] Howard Townsend to Visiting Committee, September 27, 1901, Board of Governor's Papers, NYHA; Executive Committee Minutes, October 23, 1901, November 6, 1901, NYHA and especially George Ludlam to Visiting Committee, September 25, 1901, Visiting Committee File, NYHA. Ludlam summarizes the "volume of business" transacted in private rooms and intermediate semi-private wards and considers comparative rates and policies of other New York City hospitals, the need for judicious advertising, and the possibility of extending admitting privileges to physicians outside the regular visiting staff.

[44] Chicago's Mercy Hospital, for example, advertised that the Hospital was "open to all physicians and surgeons of good standing in the city, and they are permitted to treat any patients they wish to send to private rooms " *Annual Report, 1896*, p 5 A decade later the policy was still urged and local physicians encouraged to visit the Hospital and inspect its facilities. *Annual Report, 1906*, p 7. At Cleveland's Lakeside Hospital, to cite another example, of 524 private patients in 1901, 339 were patients of non-staff members. *Thirty-fifth Annual Report, 1901*, p. 28. For some years, the Hospital had been actively encouraging non-staff physicians to use its facilities *Thirty-second Annual Report, 1898*, pp. 12-13. *Thirty-third Annual Report, 1899*, pp. 27-28.

[45] Thomas A. Emmett, *Incidents of My Life* (New York and London: G. P Putnam's Sons, 1911), pp 333-34.

Inpatient and Outpatient in the Culture of Medicine

Since the late eighteenth century, gratuitous outpatient care had been an accepted part of urban medicine; indeed it had become the principal form of institutional care for the working poor and the indigent and remained so throughout the century. Both pioneer hospitals and independent dispensaries offered "walk-in" care to American city dwellers unable to afford their own physicians. In the case of the more seriously ill, staff physicians paid house calls. The policy was effective, in keeping both with the needs implicit in the career patterns of physicians and the social perceptions of those benevolent stewards of society's wealth who paid the costs of dispensary care.[48] At minimum cost, the laboring poor could be kept out of the hospital's pauperizing wards and returned to work as soon as possible; healing itself might be expected to take place more easily in the emotionally reassuring and relatively contagion-free home. Physicians, on the other hand, found volunteer work at a dispensary or hospital outpatient facility an attractive way of accumulating clinical experience while establishing those contacts—both lay and medical—which led ultimately to professional success.

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[46] At Lakeside Hospital, by 1912 income from patients totalled $117,131.57 and current expenses $229,275.28. *Forty-sixth Annual Report, 1912*, p. 36

[47] Though limitations of space make it impossible to discuss here, the hospital was becoming increasingly a necessity for those physicians who sought a niche within the world of academic medicine, that is for those clinicians who, for whatever reason, sought to define their aspirations in other than purely economic terms.

[48] Most cities, moreover, employed district or public physicians to treat the dependent poor in their homes and thus avoid the more expensive and morally perilous inpatient care in the almshouse. By the end of the century, many hospital admissions came on referral from such physicians or from those employed by private dispensaries (who also frequently treated patients in their homes).

In the hierarchy of professional achievement, however, outpatient appointments were always less desirable than attending physicianships. Control of beds, the opportunity to select and monitor challenging cases, the opportunity for surgeons to perform "important" operations—most prominently, the traditional social distinction of the position itself, guaranteed that the inpatient physician would enjoy more status than his outpatient confrere.

Emphasis might change, but the distinctions between inpatient and outpatient care remained sharp. Outpatient ailments were episodic, generally not life-threatening and, perhaps most important, remained ordinarily outside the economic nexus. Inpatient care, on the other hand, was less episodic, related to more dramatic ills, and was consistently associated with the status attached to hospital physicianships. (Chronic ailments were generally treated in municipal and county institutions—often as custodial rather than medical problems.) The gap between the two kinds of appointment grew wider as the century progressed and medicine's technical capabilities increased; especially in surgery, inpatient care seemed increasingly the only appropriate basis upon which proper treatment might be undertaken. And though providing inpatient care was, through the first three-quarters of the century, ordinarily unpaid, by the end of the century, as we have suggested, it was becoming increasingly clear to enterprising medical men that the hospital might soon play a significant role in private practice. Outpatient work, on the other hand, remained a formative stage in the physician's professional evolution; a stage decreasingly central as hospitals increased in number and opportunities for clinical training expanded.

In the 1880s, however, outpatient and clinic work still constituted an important phase in the medical career, even though the function of such practice had changed since the beginning of the century. In the larger urban hospitals, outpatient appointments provided an alternative career pattern by which ambitious young practitioners accumulated specialized skills as they waited more-or-less patiently to achieve the higher status of attending physician or surgeon. Of equal significance, outpatient services had come to play a crucial role in the gradual acceptance of new clinical specialities. Neurology, pediatrics, dermatology and otology, for example, all flourished in the more flexible precincts of the outpatient service. In the last third of the century, this evolution became an accepted pattern: a new specialty would establish a tentative place in the hospital by having an outpatient clinic and only later acquire inpatient beds.

Though undoubtedly important to budding specialists and their students, outpatient medicine exhibited a number of chronic shortcomings. One was the frequently poor quality of care. Clinic hours were short, waiting rooms crowded and lacking in privacy, examinations perfunctory, records casually kept, and attendance by senior physicians was sometimes equally casual. A second was the organizational problem of relating outpatient staff and functions to the hospital and its senior attending staff. Such medical dynasts saw outpatient work as useful in serving to "feed clinical material" to the hospital's inpatient beds and as a necessary part of training for medical students and nurses. When these functions were not performed effectively friction developed. Conflict also emerged as inpatient and outpatient physicians squabbled over facilities and privileges. A third problem developed at the very end of the nineteenth and beginning of the twentieth centuries: it became increasingly difficult to interest "first-class" young men in routine outpatient work.[49] Such positions, as a New York Hospital report explained in 1906, had become comparatively undesirable as more attractive opportunities appeared and clinical instruction became an integral part of medical education.[50] A fourth and particularly bitter conflict arose over the economic aspects of outpatient care. Contemporaries increasingly assumed that many of those consulting hospital and dispensary outpatient departments were fully capable of employing their own physicians. In soliciting gratuitous care they were participating in a kind of fraud, one generally described by contemporaries as "charity abuse." Hospital and dispensary spokesmen became increasingly defensive as rank and file practitioners attacked what they perceived to be unfair competition.

Though it may sound judgmental, it must be understood that patient care as such was not ordinarily a consideration in these discussions—beyond the institutional and moral inertia shaped by the traditional assumption that medical care should be supplied to the deserving among the indigent (the crippled, blind, aged and widowed) and those working poor temporarily in need. Medical care had been in this sense a right at the beginning of the nineteenth century.[51] Certainly few if any physicians opposed in a categorical way the need for such gratuitous outpatient care or the responsibility of the medical profession to provide it. But the provision of such care provided on the whole neither material wealth nor intellectual glory. No one opposed outpatient care at mid century, but neither did more than a few care intensely about it as such. The significance of outpatient work to medical men lay in the opportunities it provided for the acquisition of status and clinical experience. In some ways this orientation pervaded all decision-making within the hospital. Institutional policies were determined, that is, only partially by the needs of a specific population; they were shaped far more often by some institutional dilemma, such as financial stringency, or some professional conflict, such as access to patients for teaching purposes. If optimum care for the working poor had been an explicit priority in shaping the delivery of medical care, clinic hours—to cite only the most mundane of examples—would hardly have been limited to the working day.

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[49] Paid positions were often hardest to fill, for these tended to be full-time, most frequently in emergency rooms, positions in specialty clinics, though ordinarily unpaid, were nevertheless more desirable.

[50] "The acquirements of recent graduates of our medical school[s] have been so greatly increased that the men no longer feel the need of doing dispensary work for self-improvement." The report noted the same experience at other outpatient departments at which they had made inquiries. Executive Committee, Minutes, October 31, 1906, NYHA. Cf L. R G. Crandon to George Monks, October 15, 1910, Crandon to Paul Thorndike, April 30, 1910, Records of the Surgical Staff, 1906-17, Boston City Hospital Archives.

Let me cite several examples by way of illustrating these generalizations. In 1887, the New York Hospital had experienced a series of conflicts between inpatient and outpatient staff as well as complaints with regard to the quality of its outpatient care. The hospital's attending physicians felt particularly strongly that the outpatient department should function primarily as a feeder, a provider of "good material", for the inpatient wards; and it seemed clearly to have failed to fulfill this goal. The attending physicians accordingly sought to trim some of the larger—and they charged superfluous—outpatient departments. The arguments employed by both sides in the controversy are illuminating. In opposing the suggested dissolution of the outpatient gynecology service, for example, its advocates made four points in order of decreasing significance. First, they contended, this service supplied the hospital with valuable referrals, "the treatment of which often demands important operations." Second, the experience it provided was essential to nursing education. Third, it was similarly important for medical students. Fourth, and finally, physicians connected with the service noted that it was useful to the working people in the vicinity.[52] Medical staff priorities could not have been more precisely displayed. Such conflict and the occasional charges of casual or brutal treatment by outpatient and ambulance physicians did not end at the New York Hospital with this particular imbroglio, but surfaced again and again well into the twentieth century. And though some of the hospital's lay trustees always remained sceptical of medical motives and the quality of medical performance, the periodic recurrence of similar complaints indicates how directly they grew out of the hospital's fundamental orientation to the respective needs of the medical profession and of its patient constituency.

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[51] This refers, of course, to urban practice and to the poor and working classes It was assumed, at least in theory, that small town and rural practitioners would attend the indigent without charge and the needy at reduced rates

[52] For the "good material" phrase, see Medical Board to Board of Governors, Executive Committee, Minutes, January 31, 1887, NYHA. For the itemized list of reasons for maintaining a gynecological

At the Massachusetts General Hospital, the outpatient department constituted a source of conflict throughout the period of our discussion as bright young physicians sought to rise out of the lesser status of outpatient physician and into that of attending physician.[53] Outpatient physicians had their own board, but in theory could appeal to the hospital's trustees only through attending physicians and surgeons, a situation which the outpatient staff did not find to their liking.[54] Specialists practicing without compensation in the hospital's outpatient service fought repeatedly for access to inpatient beds as well; without such beds there was no way of following cases (as they saw it), or of applying particularly interesting or innovative therapeutic techniques. I do not mean to suggest that open conflict was an everyday reality in the hospital—but that it was implicit in the motives and relationships of staff physicians. Most of the outpatient physicians resigned themselves to their secondary status within the hospital hierarchy and waited until the Massachusetts General's time-honored seniority system offered a vacant physicianship. And while some of the specialties represented on the outpatient staff in the early twentieth century continued to attract bright and plausible young men, other fields of lesser status were unable to attract young men of "Massachusetts General Hospital quality." In fields such as pediatrics, radiology, and orthopedic surgery, the administration was driven occasionally to the

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outpatient department, see entries for November 5, 1888 and December 31, 1888 See also June 2, 1888, Executive Committee Minutes, NYHA

[53] Positions as pathologist or laboratory chief served a parallel role at the end of the nineteenth and beginning of the twentieth century, as a way for bright young men to achieve some reputation and demonstrate loyalty to the hospital while waiting for more desirable attending physicianships to become vacant.

[54] Charles Townsend to E. G. Cutter, Secretary, Staff of Physicians and Surgeons, January 20, March 31, 1898, November 1, 1897; Thomas B. Hall to Physicians and Surgeons to Outpatients, March 11, 1898, A. Cabot, Chairman, Committee appointed to confer with the Committee from the Outpatient Department, to Visiting Staff, April 22, 1898, Visiting Staff Correspondence, 1881-1897, Box 1, MGH Papers, Countway Library.

extreme of appointing candidates who had not graduated from the Harvard Medical School.

Most such pushing and shoving remained hidden from the public and often from trustees as well. In the public mind, and in the reflections of the great majority of medical practitioners as well, the central dilemma of outpatient care was that subsumed under the term "charity abuse." For the ordinary urban practitioner, the hospital was a stronghold of medical privilege, and those cases which the hospital's attending staff regarded as potential "clinical material" were his bread and butter.[55] Even those administrators convinced of the need for a vigorous outpatient effort had become increasingly defensive by the late 1890s. Earlier convictions that such benevolence was a moral responsibility of the medical profession had faded by the beginning of the twentieth century. Only a minority of medical men still felt it preferable that a few dissimulators received undeserved care rather than the genuinely needy being either discouraged or humiliated by questions and investigations.[56] By the 1890s, critics of promiscuous charity emphasized not only the drain of unjustified demands on hospital treasuries, but also the moral dangers of instilling a pauper mentality in the recipients of unearned and thus unappreciated benefits. In addition, the generation's newly self-conscious rationalizers of charity joined their voices to those of disaffected medical men in decrying the existing system of providing care without adequate financial investigation. By the opening years of the twentieth century most hospitals and dispensaries had to some extent responded to such criticism.[57]

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[55] Most history and sociology of medicine is written on the assumption that there is something called a medical profession which can be treated in monolithic fashion. As the conflict surrounding this and other issues underlines, physicians differed widely in their social and economic needs and perceptions.

[56] The debate surrounding the problem of so-called "dispensary abuse" is extensive and deadeningly repetitious and cannot be pursued here. However, it should be emphasized that it was particularly sharp and divisive among the attending staffs of some of the older and most prestigious hospitals, none more so than the MGH The "Outpatient Department Fees & Abuse" file in the MGH Archives contains a great deal of revealing material, especially responses by individual staff members to a circular letter of 1893. The older position was represented by Brahmin physician John Homans, among others, who opposed the imposition of even the smallest outpatient fee, on the ground that "it is more important to open a felon properly & at once for a laboring man or woman, than to detect some one who is imposing on the charity. . . ." Homans to Edmund Dwight, November 17, 1893.

[57] In reading between the lines of this debate, it becomes apparent that a good many patients—especially at the outpatient departments of the largest and best-known hospitals—did have some ability to pay, but came to special clinics seeking more definitive diagnoses than their regular practitioners were capable of providing. Many indeed were referred informally by family physicians who desired a consultation their patients could not have afforded as private patients. "The patients come very largely for diagnosis," as one contemporary explained it, "and care little for the prescriptions They will be treated at home, but wish to know 'if the Doctor is right.'" E. G. Cutler to Edmund Dwight, November 18, 1893.

Some institutions arranged with professional social work organizations to check the legitimacy of patient claims of financial inability; others conducted their own financial investigations or began to make small charges for the use of outpatient facilities.[58] Inpatients were comparatively immune from such charges of misrepresentation; for at least to contemporary perceptions these patients were truly in need, a need demonstrated both by the admitting physician's diagnosis and a willingness to enter the hospital's forbidding wards.

As has already been suggested, a minority of physicians and administrators sought not only to emphasize the continued need for outpatient and dispensary care, but to expand and improve it. In their arguments, truly effective medical care and a more humane urbane society were inextricably related. Aspects of traditional etiological thought as well as a motivating mixture of Christianity, socialism, and a concern for ameliorating the conditions of urban life all pointed toward the need for a medicine with roots in the family and community. Traditional medical thought had never questioned the significance of the relationship between environment and illness: diet, work, family and economic stress, filth, an impure atmosphere, all interacted to shape either resistance or predisposition to sickness. But such assumptions, though never explicitly or entirely disavowed during the nineteenth century, grew decreasingly compelling in the century's last quarter. The germ theory and microscopic pathology provided a seemingly more precise and circumstantial framework in which to explain sickness and health.[59] This new knowledge implied first the specificity of particular diseases as clinical entities, and—ultimately—specificity of cause. Older and more inclusive ideas of disease causation seemed in comparison vague and diffuse. Questions of resistance, of predisposition, of the relation between social environment

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Pharmacy File, MGH Archives Cf. M. H. Richardson to MGH Trustees, November 21, 1893, Outpatient File, MGH Archives, Richardson emphasized the distrust felt by many among the poor for their local physicians.

[58] By 1901, for example, the New York Hospital paid twenty-five dollars each month to the Association for Improving the Condition of the Poor for investigating the financial status of prospective patients. They also charged ten cents per prescription and a small fee for treatment—though even such small fees were remitted in "worthy" cases. George Ludlam to Francis H. McLean, Superintendent's Letterbooks, March 19, 1901, NYHA

[59] These newer approaches were also more useful in the sense of being capable of reduction to research situations in the laboratory and hospital ward—and from thence to publication. The seemingly "harder" aspect of such investigation offered an irresistible appeal for many ambitious young physicians. Again, the evolution of ideas, institutional forms, and career patterns were inextricably related—with all ultimately affecting patient care.

and health seemed less and less relevant. Moreover, implementation of the social program implicit in environmental views demanded the difficult and unsettling consideration of political and social action. Controversies over purity of water and milk, for example, demonstrate this clearly; even such fearsome spectres as typhoid and bovine tuberculosis were insufficient to define and neutralize public debate. In addition, the provision of public outpatient care had always borne a low status in the medical community. It could compete neither with the prestige of academic inpatient medicine, nor the rewards of private practice.

A few medical reformers did advocate an increased intervention in the social environment. Brahmin physician Richard Cabot, for example, probably the most outspoken and articulate of such social activists pictured each patient as a kind of sampling device (like the bacteriologist's sample of a water supply) reflecting in his sickness the nature of the society which helped produce such disability.

> As a bucket let down into an artesian well or into the ocean brings up from the bottom a sample of what is widely distributed there, so a patient with lead poisoning, with tuberculosis, with a court record, brings us into touch with conditions which we should not ignore.[60]

It was entirely consistent that Cabot should have been prime mover in establishing America's first hospital social service department (at the Massachusetts General Hospital) and that he should have condemned the disjunction between patient as citizen and family member and the same patient as hospital case; the two dimensions of experience could not be disassociated without reducing the quality of care.[61] Such arguments paralleled the motivations and social assumptions of contemporary social welfare advocates, many of whom, like Lillian Wald or Alice Hamilton, took a professional interest in socially oriented medical care.

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[60] Cabot, *The Achievements, Standards and Prospects of the Massachusetts General Hospital Ether Day Address. 1919* (Boston· MGH, 1919), p. 19.

[61] "Beyond the special disease," Cabot argued, "of a special child or adult who comes to us in the dispensary, stands a family problem, ultimately a community problem, poverty, bad housing, bad food, bad habits and associations, ignorance of the ways and means of making a clean and health life on scanty means " "Why Should Hospitals Neglect the Care of Chronic Curable Disease in Out-Patients?", *St Paul Med J.*, 1908, *10*· 6 For more extended expositions of Cabot's position, see *Social Service and the Art of Healing* (New York Moffat, Yard, 1909) and *Social Work. Essays on the Meeting-Ground of Doctor and Social Worker* (Boston and New York Houghton Mifflin, 1919) His social service activities at the MGH are described by Ida M. Cannon, *On the Social Frontier of Medicine Pioneering in Medical Social Service* (Cambridge· Harvard, 1952) Chester R Burns has recently noted Cabot's attempt to create a new-model ethics suitable for the structure of the modern hospital and the kinds of interaction it fostered "Richard Clarke Cabot (1868-1939) and the Reformation in American Medical Ethics," *Bull Hist Med.*, 1977, *51* 353-368, esp 361-67.

Michael Davis, administrator of the Boston Dispensary in the years before the First World War, was perhaps the most ingenious among his contemporaries in shaping plans for outpatient medicine. Davis sought to turn the staid Boston Dispensary into something resembling a health maintenance organization, not for the indigent alone, but for all Bostonians who could not afford the most advanced and specialized care. He emphasized both the need to reach into patients' homes and the unsettling reality that many even among skilled workers and middle-class clerks and managers could not afford the services of an array of special consultants in the event of illness; he emphasized as well that such services should not be limited to the treatment of acute ills, but rather seen as necessary preventive measures.[62] Davis sought accordingly to use the Dispensary's resources to disseminate the preventive truths of cleanliness, proper diet, and appropriate clothing. The dispensary and outpatient department of a major hospital could thus be made to fill gaps in the prevailing system of urban medical care. Davis was not alone in articulating such views. Yet just as his ideas and pilot programs were being elaborated, changes in medical ideas, institutional practices and related medical career patterns were making the independent dispensary (such as his Boston Dispensary) well-nigh obsolete, and the hospital outpatient department less and less important to the plans of aspiring young physicians.[63] Twentieth-century outpatient clinics continued and continue to treat vast numbers, but this had little to do with their comparatively low status in the culture of medicine.

As it became less relevant to the career needs of aspiring physicians, the independent dispensary was left with the residual function of providing casual and largely gratuitous medical care. The dominion of fee for service medicine remained essentially unchallenged—even rhetorically—by most Progressive critics of America's medical care system. Those ambitious young men incapable of remaining content with the mere accumulation of fees and clinical reputation were as the twentieth century advanced ordinarily attracted not by social medicine, but increasingly by the "higher" and seemingly less ambiguous demands of research; the hospital was inevitably the locus for those kinds of clinical investigation which bore the highest status. The reward systems of medicine and society reinforced each other, offering their highest inducements to those physicians controlling hospital access and hospital practice. The hopes of those who sought to expand and elaborate outpatient facilities were doomed to frustration.

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[62] In 1919, the Boston Dispensary initiated a Health Clinic which provided a complete medical evaluation for a nominal five dollar fee. It included examinations by an ophthalmologist, otolaryngologist, physical diagnosis, and blood and urine tests. *Boston Dispensary, Annual Report*, 1920-21, p. 13. See Davis and Warner, *Dispensaries*, for a more complete exposition of Davis' views at the time.

[63] For a more detailed discussion, see Rosenberg, "Social Class and Medical Care."

Visions and Realities: The Hospital in a New Century

Of course, such reformers as Michael Davis and Richard Cabot were not alone in finding fault with American hospitals. Even many of the self-consciously professional leaders in the new field of hospital administration were conscious of imperfections in their proud new temples of healing and sought to make them as humane as they were by intent scientific. At the beginning of the twentieth century certain thoughtful administrators such as George Rowe of the Boston City Hospital, George P. Ludlam of the New York Hospital, and S. S. Goldwater of the Mt. Sinai Hospital in New York were well aware of flaws in the institutions they administered. Such men feared a hospital which would, as one critic put it, become a "great machine" reducing to cogs those patients unfortunate enough to find themselves within it, or—in the words of another contemporary—an "experiment station" of interest chiefly to a small clique of ambitious physicians.[64]

Administrators such as those I have cited by way of example were committed despite occasional reservations, to the basic form assumed by the institutions they led. They rarely questioned the primacy of the hospital in urban medical care or the necessary autonomy of physicians in matters seemingly medical. Nevertheless, they were as aware as any of the hospital's most acid critics of the dangers of impersonality, of the crippling pressures implied by costcutting, of the evils of premature specialization, and of the dangers of an unchecked medical autonomy within the hospital. As we shall see, they entertained certain solutions, or at least emphases in policy. But all such modes of inducing change were limited by their very inability to find values and institutional forms genuinely alternative to the inexorable reality of the medical culture and its demands on the one hand, or the dilemma implied by the voluntary hospital as an essentially isolated economic and social entity on the other.

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[64] "The hospital must," as one such critic put it, "realize itself to be a great social force and not content itself to be, as unfortunately it frequently is, the mere adjunct, laboratory or experiment station of some medical school or coterie of men " Leo M. Franklin, "Some Social Aspects of the Hospital," *Trans Amer Hosp. Assoc.*, 1912, *14* 105. Or, as a physician exhorted graduates of New York Hospital's Training School for Nurses in 1911. ". . we should not regard the hospital as a big healing machine . . . Many of us know that the *clinical material*, as it is cynically called, that fills our beds, cannot be all classed as *material* on which we are to do machine work." George Peabody, *Address at the Graduating Exercises of 1911*. . . (n.p., n.d [New York New York Hospital, 1911]), p. 14.

By 1910, almost all of the criticisms so familiar in the 1970s were already being directed toward American hospitals. From the patient's perspective, the hospital seemed often impersonal and bureaucratic. Jane Addams, for example, described such organizational inhumanity to a group of hospital administrators by citing the case of a woman suffering from a severe fever who had been admitted, and in conformity with regulations had been bathed and had her hair braided but who expired before being treated by a physician.[65] The patient had become, so the already-cliched argument ran, not a person but a configuration of organs and potential syndromes. Richard Cabot expressed such attitudes with whimsical acidity as he quoted the words of his clinical assistant who greeted him one morning with the enthusiastic report that there awaited:

> A pretty good lot of material. There's a couple of good hearts, a big liver with jaundice, a floating kidney, three pernicious anemias, and a flat-foot.[66]

Hospital physicians infrequently treated the whole patient, the argument followed, certainly not as part of a specific family and specific community; specialists addressed themselves to a focus narrowed by their training. Paralleling this induced myopia was a disproportionate interest in acute ailments—especially those in which the hospital's technical capabilities might lead to life-saving intervention—and a corresponding lack of interest in convalescence and chronic illness.[67] The hospital was, finally, coming to seem a province of the very rich and the extremely poor; the great mass of Americans of middling income would not willingly enter a hospital as ward patients, but could not afford the rates charged for private patients either.

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[65] Addams, "The Layman's View of Hospital Work among the Poor," *Trans. Amer Hosp Assoc.*, 1907, *9* 58-59. But see the discussion following her paper by her superintendent audience, pp. 88-93.

[66] Cabot, *Social Service and the Art of Healing*, p. 33, cf. pp 174, 177 Cabot was often critical of a myopic hospital-based specialism; he was, however, even more critical of most "neighborhood" physicians and their technical inadequacies. Private medicine, he argued, was second-class medicine. *American Magazine*, 1916, *81*. 7-9, 77-78, (May, 1916), 43-44, 76-81. I would like to thank Morris Vogel for calling this article to my attention Cabot, ironically, is perhaps most famous in the history of medicine for his pioneer work in systematizing the teaching of differential diagnosis.

[67] As early as 1879, an experienced hospital physician could warn of the tendency to ignore those patients regarded as incurable Henry Gibbons, "Notes of Hospital and Private Practice," California State Medical Society, *Trans.*, *1878-79*, p 3.

There were a number of plausible responses to the felt imperfections of the early twentieth-century hospital or perhaps ways of rationalizing their administrators' tasks. One was the invocation of something called efficiency. Second, and seemingly related, was a faith in the ability of science not only to provide better care in the present, but solve existing problems by the accumulation of knowledge in the future. Third, was a program of increased social service, better convalescent homes, and a more sensitive response to the economic problems of patients from every social class—in sum, that is, a commitment to reasoned meliorism. All of these positions were widely endorsed and all had real if varying effects on the institution; none altered those rigidities and imperfections in American hospitals already apparent to critics in the first decade of this century.

Efficiency was a term invoked so frequently and with so little precise content that one must approach it with the caution appropriate to a word so useful, yet at the same time so elusive. Efficiency had a number of distinct meanings within the hospital. One centered on the mastery of an intrinsically forbidding task: reducing the complex internal life and external relationships of the hospital to an at least minimal order. It is only to have been expected that the meetings of hospital superintendents should often have concerned themselves with such matters as the best forms for maintaining patient records, for submitting bills, and for controlling accounts payable.[68] Efficiency meant as well the creation of a hospital routine, one which would simplify medical care and avoid waste. If every aspect of the patient's treatment, from admission through discharge, were carefully specified, nurses, attendants, and house officers could provide an effective level of care. Mistakes could never be eliminated, nor could accidents be entirely avoided, but routinization of care and treatment, the argument stated, meant that such misadventures would be minimized. This ordering of tasks would not only shape an irreproachable level of medical care, but applied to purchasing, cleaning, and cooking, allow the hospital to make the most effective use of its limited financial resources.

Efficiency meant discipline as well as routine; it implied centralized control over an increasingly diverse work force. The desire to impose an ordered discipline upon the hospital was not limited to the sphere of rhetoric, nor did it begin with the self-conscious vogue of efficiency at the end of the nineteenth century. It began in the 1870s with an effort by most large hospitals to impose order from above upon the institution and its sometimes intractable employees. Such efforts included demands for increased cleanliness and decreased alcohol consumption and were symbolized by administration demands for the wearing of uniforms indicating the status and function of their wearer. It meant the wresting of such strongholds of internal power as the kitchen and purchasing office away from the "untrained" and "unprofessional." Its advocates contended that the visible signs of an efficient bureaucratic order actually reassured patients that they were in capable hands. "It is a great inspiration to the patient," as one administrator explained in 1911, "when entering a hospital, be he the most intelligent or the most ignorant, to note the system and regularity of the institution; that there is no confusion, no criticism of the orderlies and nurses by each other."[69]

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[68] The best sources documenting the growth of this "professional" attitude are the *National Hospital Record* (published between 1897 and 1915 when it merged into *Modern Hospital*) and the *Transactions* of the American Hospital Association (begun in 1899) Revealing as well are the compilation of guides to management and design, such as Charlotte Aikens, ed., *Hospital Management A Handbook for Hospital Trustees, Superintendents, Training-School Principals, Physicians, and all who are Actively Engaged in Promoting Hospital Work* (Philadelphia: W. B. Saunders, 1911), John A. Hornsby and R. E Schmidt, *The Modern Hospital* (Philadelphia: W. B. Saunders, 1913).

The invocation of efficiency played a legitimating role, in addition, implying devotion to a mode of decision-making untainted by self-interest. E. A Codman, for example, a Boston surgeon and perhaps the most fanatically dedicated among American advocates of hospital efficiency, was well-aware of this function of the "efficiency ideal." Without such a selfless goal, he warned the President of the American College of Surgeons, the organization could offer little to differentiate it from a trade union.[70] Efficiency implied selflessness and thus moral legitimacy at a time when Americans saw little reason to accept traditional medical self-conceptions; charity, wisdom, and self-sacrifice seemed in any case less relevant than mastery of organization and the laboratory's mysteries.

But the rhetoric of efficiency was not easily fashioned into a corresponding reality. Critics at the time were well aware that true efficiency would not easily reshape the American hospital. As Codman, for example, emphasized, uncompromising efficiency implied the evaluation of medical men, medical procedures, even medical fees; this was a goal not easily achieved.[71] Second, even those administrators most committed to efficiency realized that a hospital could not be run with the relentless discipline of a factory or army barracks; it had also to be a family writ large, providing sympathy and concern as well as economy and clinical virtuosity. The hospital, as one pioneer executive put it:

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[69] E. A. Vander Veer, "The Importance of a General Hospital in the Education of the Profession and the Public," *Bull. Amer. Acad. Med.*, June 1911, *12* 157.

[70] Codman to J. M. T. Finney, December 27, 1915, Codman Papers, Countway Library. Codman was urging his "end result" system for evaluating the long-term success of surgery

[71] To cite one area of conflict, it was difficult for administrators to gain the support of physicians in economy drives. Physicians, of course, contended that laymen had no understanding of the technical questions involved. See, for example, the comments by the Superintendent of the Philadelphia Polyclinic

> . . . has a peculiarity not commonly recognized: while it conducts a *business*, it is the *home* of those who live in it.
> . . . The management of a hospital is often likened to a business, such as that of a manufactory or a mercantile house. It is more than that by having a different human element in it; the special work of the hospital is done by a family, and should be governed with due regard for its domestic unity.[72]

Finally, efficiency was hardly a realistic goal in a decentralized and uncoordinated system of medical care. Within every city, individual hospitals duplicated services and multiplied costs as they competed for both paying patients and status. As early as the 1870s, New York City hospitals had sought to cooperate rationally, dividing the city up so that ambulance and outpatient services would have clearly demarcated territories; it was even suggested that hospitals might specialize in particular ailments. However little came of this or of attempts to form regional hospital associations early in the twentieth century.[73] Institutions continued to compete, not only for funds and private patients, but for medical reputation as well. Such rivalries in a decentralized system meant, in the words of a well-informed contemporary in 1911, that cooperation between hospitals would remain on the level of rhetoric.[74] The repetition of similar criticisms in the 1960s and 1970s only underlines the tenacity of such patterns and the motivations which they reflect.

Hospital, *Twenty-third Annual Report, 1905,* p. 44 or those at a meeting of the superintendent's association by that perennial gadfly E. A. Codman: *Trans Amer. Hosp. Assoc.*, 1913, *15*, 183.

[72] Edward Cowles, "The Relations of the Medical Staff to the Governing Bodies in Hospitals," in John S. Billings and Henry M. Hurd, eds., *Hospitals, Dispensaries and Nursing* (Baltimore· The Johns Hopkins Press, 1894), p 72. Though discipline was necessary, Hurd argued, "it is unwise to establish and enforce a semi-military discipline or even one which would be practicable or advisable in a railway, a large factory, a corporation, or other business enterprise." "Hospital Organization and Management," *University Medical Magazine*, 1896, *9*. 492.

[73] As early as the turn of the century, some municipal hospital administrators had begun to complain of an oversupply of urban hospital beds. W. L. Estes, "Hospital Management," *National Hospital Record, 1900, 3*. 8-9. For a pioneer attempt to rationalize the work of New York's hospitals, see· "Considerations to come before the joint meeting of representatives of the different hospitals to convene at no. 8 West 16th," n.d., 1876 File, Board of Governors' Papers, NYHA

[74] Charles Emerson, "The American Hospital Field," in Aikens, ed., *Hospital Management*, p. 22 The same year, another authority warned against the "needless multiplication of hospitals in a community." The proliferation of those institutions "likely to become a public charge" should be controlled by law Frank J. Firth, *The Foundation of Hospital Efficiency* (n.p., 1911), p. 9.

If the invoking of efficiency served in part as a means of avoiding serious consideration of the hospital as a social institution, a parallel faith in scientific medicine played a similar and perhaps even more significant role. Faith in medicine as science was well-nigh universal; the inexorable accumulation of hard knowledge promised to solve the hospital's problems as it would those of therapeutics generally. No one considered that such progress might imply new problems. Indeed the most "advanced" and influential reformers of the 1870s and 1880s saw the principal function of the new model hospital as that of providing a necessary home for scientific medicine. John Shaw Billings, probably the most prescient of such reformers and influential advisor to the trustees of the Johns Hopkins Hospital, saw this as a principal function of Baltimore's ambitious new institution. It would, he urged, not only educate clinicians as major hospitals always had, but train a new species of clinical investigator and serve as a laboratory for their investigations.[75] "Appointments to the staff," as the Hopkins Hospital superintendent phrased these new standards, "should not be regarded as honors simply, but rather as imperative calls to duty and to fresh efforts to investigate disease."[76] At the Johns Hopkins Hospital and School of Medicine at least, these goals were partly realized and played an extraordinarily influential role in exemplifying such new ideas. Hospitals ambitious for scientific recognition could not permanently ignore so prominent an example.

If a late eighteenth-century understanding of the hospital's social mission was based on Christian stewardship allied with a perhaps less strongly felt commitment to medical education, the late nineteenth-century hospital and its leaders found their justifications increasingly in the claims of science. To the generation which came of age at the end of the nineteenth century, these claims were compelling indeed. Aseptic surgery, the X-ray, applied immunology, all seemed to provide objective, almost overwhelming, evidence of the promise offered by continued investigation. A decade later, even more fundamental insights beckoned; to an aspiring physician in 1910, the promise of biochemistry, of physiology, of bacteriology seemed limitless, their application in clinical medicine no more than a matter of time. "The hospitals," S. S. Goldwater reasonably contended, "which have been, and are doing, most for hospital patients and for humanity, are those which provide liberally for clinical and laboratory research and for the education of the medical student." Traditional attitudes toward the hospital's proper sphere only impeded the liberating accumulation of healing knowledge.

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[75] Billings was well aware of the inevitable compromises with the needs of individual patients which would have to be made. The patient had feelings too, he warned in 1876. "He is not to have his feelings hurt by being, against his will, brought before a large class of unsympathetic, noisy students, to be lectured over as if he were a curious sort of beetle " Yet, Billings emphasized, the Hospital must not be limited "absolutely to doing good to the patients in it, regulating or refusing the claim which suffering humanity in general has to the benefit of the experience which we gain . ." *Reports and Papers relating to Construction and Organization of Johns Hopkins Hospital July 15, 1876* (n p., n.d. [Baltimore Johns Hopkins, 1876]), p. 5

[76] H M. Hurd, "Laboratories and Hospital Work," *Bull Amer Acad. Med.*, 1896, *2:* 157. For a detailed account of the Johns Hopkins Hospital and School of Medicine before the First World War, see: Alan M Chesney, *The Johns Hopkins Hospital and the Johns Hopkins University School of Medicine*, Three vols. (Baltimore Johns Hopkins, 1943, 1958, 1963) and for an evaluation of the Hopkins' influence, Richard H Shryock, *The Unique Influence of the Johns Hopkins University on American Medicine* (Copenhagen. Munksgaard, 1953)

> In wet-blanketing the ardor of scientific enthusiasm, in shutting their doors in the face of the research worker and its medical student, hospitals have abandoned their claims to distinction and have stunted their own growth. Sentimentality has commanded them to lock up their priceless storehouses of knowledge, and medical science in America has been half starved in consequence.[77]

In the uncompromising light of science, traditional concerns for the patient and his views had become mere "sentimentality"—even to an administrator concerned with the social dimensions of the patient's experience.

Not surprisingly, hospitals sought consciously to capitalize on their image as temples of science. Administrators emphasized the gleaming walls and intimidating apparatus in their operating rooms and laboratories, the startling photographs taken by the X-ray "in its wonderful powers as a searchlight" as they appealed for funds, reassured paying patients, and impressed visiting committees.[78] Private patients and their visitors were suitably awed by displays of technical capacity; the hospital with an irreproachable scientific reputation could hope to enjoy a similarly elevated standing in the community. In the 1890s it had already become apparent that scientific reputation would serve as an advantage in attracting the brightest and most ambitious young medical men and, it soon became clear, the support of individual and corporate benevolence.

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[77] "The Unfinished Business of General Hospitals," *Medical Record*, 1908, *73* 982 Cf. George Ludlam, "The Superintendent," in Aikens, ed., *Hospital Management*, p. 79.

[78] European visitors often commented on the opulent appearance of American operating rooms, the use of glass and marble, for example, where less expensive materials would have sufficed Annual reports of this period refer again and again to the gleaming and sophisticated equipment and instruments which graced their operating theaters.

Economic reality, public relations, and scientific achievement were inextricably related.[79]

But as we have come to understand, the relationship between such achievement and its application in clinical medicine is hardly simple or unambiguous. First, of course, real achievements obscured real inadequacies. New capabilities reinforced an interest in ills amenable to medical intervention, while insuring a continued lack of interest in those ills for which medicine could do little. An ever-increasing faith in newfound surgical and pharmacological skills served as well to underwrite exclusively technological approaches to problems of patient care. Second, the increasing faith in medicine as science created a certain rigidity within the hospital by magnifying the authority, if not necessarily the immediate efficacy, of the physician. The emphasis on medicine as science also undergirded the decentralized quality of hospital organization; the esoteric knowledge which the physician brought to bear upon his treatment of the patient loomed ever more important, became in fact a symbol of the hospital's social legitimacy—in some sense of the hospital itself. Within the mystical interaction between doctor and patient, social variables seemed increasingly insignificant and diffuse, and the physician's technical powers correspondingly enlarged.

In the face of such powerful trends, well meaning attempts to shape new social programs within the hospital had comparatively small impact. Special care for convalescent and chronic patients remained a low priority. (And thus voluntary hospital physicians were faced with an unrealistically narrow choice of clinical options: was a chronically ill patient to be discharged? or retained in an expensive facility oriented to acute care? In most cases there were no other options.) Medical social work, so enthusiastically advocated by Richard Cabot and a good many of his contemporaries did make a permanent, but in sum marginal, place for itself in the hospital. Most institutions did find such a service useful even after the enthusiasm which at first accompanied its introduction faded. However, the attitude of most administrators was similar to that of the medical superintendent at the Massachusetts General Hospital who after several years finally visited the social service office, somewhat bemused at this bustling nest of earnest ladies but unable to understand their relevance to his more central concerns.[80] If the hospital is likened to the kitchen of a busy restaurant, social service workers might be likened in hospital priorities to the cleaners and scourers who removed the debris left by the chef after the day's creative efforts and prepared the pots, pans and utensils for the next day of skilled prestidigitation.

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[79] The promise of scientific achievement soon became a cliché of administrators and fund-raisers. "While the field of research in medicine does not yield direct profit in dollars and cents, the world can and does draw from the laboratory of the research worker knowledge which, passing almost duty free into the possession of the community, can actually be estimated in *terms of millions* of dollars." The recent conquest of yellow fever, this particular booster continued, provided a compelling instance of such medical achievement. Christian R. Holmes, *Modern Hospitals* (Cincinnati 1908), p. 8.

Thoughtful administrators of the early twentieth-century hospital also feared that their institutions would become a refuge only for the rich and the poor. The municipal hospital would serve the poor, the voluntary hospital would serve both rich and poor but in a fashion calculated to provide very different accommodations and perquisites. The middle-class patient would not willingly enter the free ward, tainted as it was by charity, nor could he afford private accommodations and the physician's fees which normally accompanied them. Hospitals thus began, naturally enough, to create facilities suitable for the large middle class. This had been a goal at the Massachusetts General Hospital since the turn of the century. At first an informal system of graduated rates was instituted and attending physicians might at their discretion waive or reduce fees for the worthy and genteel. Finally, the hospital was able (in 1930) to open a pavilion designed to serve this middle-income constituency. But such innovations, useful as they were, had little fundamental impact on the hospital.[81]

In retrospect the deeply felt and often acute observations—and meliorist programs—of early twentieth-century critics of the hospital's social role seem to have had little impact; their commitment a mere glance outward of little significance in comparison to the compulsion exerted by the forces which shaped the hospital in its inward vision. The outward glance of social involvement was simply that, one peripheral aspect of a far more fundamental and radically inconsistent configuration of forces. The outward view seemed to most physicians not so much indefensible as irrelevant—diffuse and politically unsettling, while the most prestigious scientific insights (a word chosen advisedly) looked inward to the realms of bacteriology, biochemistry and pathology—as the century advanced to ever more precise modes of understanding the body's mechanisms in health and disease. Outpatient and dispensary medicine (and social service as well), on the other hand, were never to escape the stigma of poverty medicine; never a part of the economic structure of medical practice, they soon became a marginal concern for the profession.

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[80] Ida Cannon reported in 1908 that the superintendent of MGH had actually come in "and sat down to see what was going on I am glad he is becoming more interested or curious or whatever it is—but you can imagine there is little inspiration in it for us—except to make him feel some of our enthusiasm." Cannon to R C Cabot, Box 23, General Correspondence, Cabot Papers, Harvard University Archives, Cambridge.

[81] For an account of the MGH and its attempt to answer this problem, see: Frederic A. Washburn, *The Massachusetts General Hospital. Its Development, 1900-1935* (Boston: Houghton Mifflin, 1939), Ch. XIII, "Baker Memorial Hospital for People of Moderate Means," pp. 245-58. The MGH Archives contain a scrapbook documenting in detail the background of the Baker Memorial and reactions to it in Boston and elsewhere. See also, C. Rufus Rorem, *The Middle-Rate Plan for Hospital Patients· The First Year's Experience of the Baker Memorial of the Massachusetts General Hospital* (Chicago· Julius Rosenwald Fund, 1931). The Rosenwald Fund commissioned a number of such studies of the middle-income patient at this time.

Conclusion

Suddenly, it seemed, in the late 1960s the hospital became a problem. It has remained one. Depending on the critic's temperament, politics and pocketbook, the hospital is a source of uncontrolled inflationary pressure, or an impersonal monolith, managing in its several ways to dehumanize rich and poor at once if not alike. At the same time it seems to many to be the stronghold of a profession obsessed with income, status, and prerogative, and little concerned with needs which cannot be measured, probed, or radiated. Analysts choose among this smorgasbord of criticisms; some find all to their liking, others emphasize one theme or another. But few concerned Americans fail to find some fault with the social role and internal order of the American hospital. And if much criticism is overwrought, if most American hospitals do some things well and some do most things well—such criticisms have a certain objective basis and at the same time constitute in themselves a significant reality. How did this come about? How did the confident optimism of this century's early decades bear such ambiguous fruit?

The present state of things was, as I hope to have emphasized, already immanent in the American hospital at the turn of the century. It was implicit in the structure of American society and in the values and career patterns of the medical culture nurtured in that society.[82] Inward vision and outward glance is more than an enticing title. In the absence of a compelling assumption that hospital policies should respond in a precise way to patterns of need and morbidity, it was inevitable that the pressures exerted on medical men by their profession, allied with the profit motive and the desire of hospital trustees and administrators for eminence and financial stability, would shape hospital decision making. It was hardly to be expected that the lay trustees or politically selected boards of municipal hospitals would see their responsibilities in ways inconsistent with the assumptions of their time and class. They could in practice see no greater good than the hospital's own growth in size and clinical reputation. It was rarely considered that such ends might not be entirely compatible with the optimum delivery of medical care. And state and federal governments, of course, did little in the years before the Second World War to reshape an atomistic world of individual hospitals competing for dollars and clinical status.

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[82] I do not mean to contend that all of the trends here discussed were somehow peculiarly the product of American society. Generally parallel developments in scale and consequent professionalization took place throughout Europe and in the United Kingdom. The wealth, the decentralized and entrepreneurial aspect of American society did, however, allow for a certain lushness of growth which may well be considered characteristic

Within the hospital, increasing scale, bureaucratization, and capital costs exerted a parallel logic of their own. Like every other major institution in twentieth-century America, the hospital was dominated by the competing needs of increasingly self-conscious interest groups—in the case of the hospital, nurses, physicians, and administrators. The need of these groups to find mutual adjustment also shaped the institution's internal order. But no advocate of the patient's interest figured in this evolution; not surprisingly, the patient's feelings played no prominent role in the gradual definition of the hospital's internal environment.

We have suggested how ideological emphases such as those upon professionalism, upon efficiency and the all-sufficient efficacy of science all conspired to help legitimate this particular order and seemingly removed the hospital from the sphere of conscious policy making. The respective logics of scientific understanding and administrative rationality were left to create an effective hospital system. A lack of national and state commitment to the support and organization of medical care not only paralleled other dominant social views, but guaranteed that this state of things would not be altered by shifts in governmental policy. Events in the past three decades have underlined this truth. The sacredness of the doctor-patient relationship, buttressed both by an increasing popular willingness to accept the physician at his own estimation and the growing political power of medicine, guaranteed that federal subsidization of medical care would come only gradually and indirectly. Thus the generous support of research in the years since the Second World War helped underwrite medical education and patient care—but never with an explicit admission that anything other than research was being subsidized. Control of the hospital remained firmly in the hands of medical men and administrators. Hospitals were also supported through construction funds provided in the Hill-Burton Act (1946); again such subvention helped underwrite the building of facilities for medical care but in a fashion which did not seem to impinge on the integrity of the doctor-patient relationship. Certainly the availability of Hill-Burton funds did little to effect decision making within the hospital or drastically rearrange existing hospital priorities. It represented, that is, another example of that characteristically American phenomenon—the transmission of funds from the public to the private sector without the imposition of meaningful conditions or the evaluation of social consequences. The growth of third-party payment in this period exerted similar effects on the hospital; it provided economic support, encouraged hospital medicine, narrowed the choice of clinical options, yet provided little in the way of evaluation or control.

Planning, even the conscious discussion of public policy and its ultimate consequences for medical care, could hardly be part of this process. Yet as I have indicated previously, there can be policy—and certainly the continued hegemony of existing men, attitudes, and institutions must be considered a policy objective—without planning. In this case, of course, and in many others, the absence of effective plans and projections was an aspect of policy and must be seen in such terms. But this is neither surprising, nor peculiarly the medical historian's area of particular expert knowledge.

The medical culture and the extraordinary compulsion it exerted on its members is less concrete but no less important to an understanding of hospital growth during the last century—and is more appropriately, indeed necessarily, the historian's concern. This medical culture has historically exerted a formative influence over the behavior of physicians, defined their system of rewards, proved instrumental in creating the modern hospital's internal environment and social priorities. It formed, in short, what I have chosen to call an "inward vision." The lack of governmental control of medical care and the withering of traditional ideas of stewardship in the private sector only magnified the autonomy of the profession and its role in the shaping of medical care.

That physicians respond to the programmatic demands of their profession is not simply a sociological truism, but a political reality. Insofar, for example, as physicians have internalized the self-image of medicine as science they are committed to a particular vision of what medical care should be. On one level it implies a high status for research. In a clinical setting it implies a similarly high regard for crisis intervention. This turning inward to the body and the realm of technical capability has both structured and legitimated particular kinds of doctor-patient interactions in the twentieth century. Among other consequences, this has meant that although much institutional care is delivered through outpatient facilities, the provision of such care enjoys low status in the profession. Community medicine is seen as making minimal intellectual demands and attracts something less than maximum efforts; the majority among the most ambitious practitioners, those boasting the highest levels of aspiration turn generally to those areas of medicine which seem "hardest," that is most intellectually demanding, and eschew the apparent softness of social medicine. With the exception of a small minority of physician activists, the delivery of medical care outside the hospital was not and is not a priority. The episodic and frustrating quality of much outpatient care seems indeed to justify the low estimation of public medicine widespread in the profession.

I do not seek to question the sincerity of the great majority of elite physicians who are committed to the centrality of the hospital and, if not contemptuous, are at best tolerant of community oriented medical practice. They are indeed capable of providing the "best" medical care—as they see it; they and the laboratory workers associated with them institutionally or intellectually are, moreover, those who will make innovations. When such physicians and laboratory workers evaluate government policy in the past decade, they find little in the way of accomplishment to undermine their innate sense of worth and hierarchy. Such views cannot be dismissed as consciously self-serving; those who have assimilated the values of academic medicine boast a genuine conviction of intellectual and social legitimacy. Not all clinical investigators will be innovative, but all who are part of the world of scientific medicine must act as though they expected to be; not all medical care involves life-threatening ills and critical therapeutic intervention, but claims of physicians to autonomy are based on the assumption that all doctor-patient interactions are potentially such.

It would be naive to suggest that physicians act from motives of material self-interest alone. Indeed, these values of the medical culture which I have just suggested may in specific instances conflict with purely economic motives. We have, nevertheless, been describing a configuration of structure and motive in which economic imperatives are generally consistent with other demands made by the medical culture—and, practically speaking, in which economic needs are neatly justified in terms of the commitment and achievements of medicine as science. The hospital has in the past century become increasingly the institutional nexus for the acting out of these social and economic roles.

In the last two decades, a variety of social critics have made us aware of imperfections in this system. Even the medical community has begun itself to manifest increasing awareness of failings in contemporary hospital-oriented medicine. But the dichotomy described by the distinction between inward vision and outward glance remains fundamental—only magnified by the past half-century's advances in technical capacity. The basic inconsistencies in our hospitals—already apparent to sensitive critics three-quarters of a century ago—continue to constitute an agenda for those who would attempt to create a more flexible system of medical care.

And those reformers must be prepared to understand not only such overtly political and actuarial questions as third-party payment mechanisms or peer review but to understand and contend with the most fundamental attitudes which characterize the medical profession. Change must imply a previous recognition of the power and tenacity of the medical culture's vision of worthy and unworthy acts. It will be no easy task to modify so deeply internalized a system of assumptions; for they are a moral as well as cognitive map guiding the physician in his day to day actions. This world of medicine has produced, moreover, a seemingly overwhelming technical capacity and has shaped institutions which promote and reward these values. Laboratories, medical schools and hospitals all reflect the peculiar history and ethos of the profession as well as the social attitudes and economic relationships of the larger society. None will easily be changed.

*THE FIELDING H. GARRISON LECTURE**

"THIS GREASY COUNTERFEIT": BUTTER VERSUS OLEOMARGARINE IN THE UNITED STATES CONGRESS, 1886

JAMES HARVEY YOUNG**

In 1886 the United States Congress enacted a law placing a tax on oleomargarine.[1] The preliminaries to the vote constituted the first prolonged and impassioned controversy in the Congress involving a pure food issue. Thirty-eight years earlier, in 1848, the Congress had banned the importation of adulterated drugs, but debate had been brief and desultory.[2] Since 1879 broad bills designed to initiate federal controls over food and drugs in the domestic marketplace had languished in Congressional committees, their very breadth a bar to serious consideration by all but ardent reformers.[3] Oleomargarine, however, in the spring and summer of '86, provoked heated debate, focusing not only on matters of vested interest, but also weighing considerations of the public health, pondering issues of governmental authority, and probing the myths in which were enshrined the meaning of the American national experience.

Participants in the debate recognized both its significance and its strangeness. William Hatch of Missouri, in charge of the House bill, termed the controversy "the most remarkable parliamentary contest that has been on this floor for many years."[4] Nor for a long, long time, observed Warner Miller of New York, in charge of the bill in the Senate, had a measure "excited so much public interest."[5] Miller frankly confessed that the oleomargarine bill constituted "a new species of legislation, or largely so, in this country, and under our system; but," he added, "the exigencies of this case seem so great that this body can not afford to ignore them." That very novelty led a South Carolina senator to condemn the bill for embodying "the most flagrant, unblushing disregard of the principles of the Constitution that has ever been introduced into the Congress."[6] Thus both sides agreed they wrestled with fundamentals. "No debate I have listened to since I have been a member of this House," said a West Virginia representative, "has been marked by more frequent recurrence to those first principles which are supposed to be sound and safe guides in all legislation."[7] Partly for this reason traditional alliances fell apart. Never before, asserted a congressman from Arkansas, has a bill "brought together so many heretofore supposed inconsistent, antagonistic, and hostile elements: . . . the free-trader standing side by side with the pig-iron protectionist, the advocate of the greatest amount of liberty . . . hugged breast to breast . . . with the advocate of . . . blue laws and sumptuary legislation."[8] If a bomb had blown up all the old citadels of power, scattering adherents to the ends of the earth, and each had arisen speaking the "new doctrine given by this measure, confusion could not have been more completely confounded." An opponent of the bill from Chicago also expressed aggravated wonder that high tariff Republicans could unite with anti-tariff Democrats "to destroy capital and depress labor in one manufacturing branch in order to revive[,] it is said[,] the drooping dairy interests."[9]

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[1] An act defining butter, also imposing a tax upon and regulating the manufacture, sale, importation, and exportation of oleomargarine 24 U.S. Stat. 209 (Aug. 2, 1886).

[2] An act to prevent the importation of adulterated and spurious drugs and medicines. 9 U S Stat 237 (June 26, 1848).

[3] The first broad bill was introduced on January 20, 1879, by Hendrick B. Wright of Pennsylvania. H.R. 5916, *Congressional Record,* 45th Congress, 3rd session, p 575. The first bill concerned especially with oleomargarine was introduced on December 13, 1881, by John R. Thomas of Illinois, H R 142, *Congressional Record,* 47th Cong , 1st sess., p. 93. In the 49th Congress, 1st session, during which the oleomargarine tax bill became law, sixteen other bills for controlling oleomargarine had been introduced.

[4] *Congressional Record,* 49th Cong. 1st sess , p. 5201.

The "drooping dairy interests" had brought the bill about. Agricultural depression in the 1870s, renewed in the early '80s, had produced distress and provoked anxiety.[10] Farm organizations, like the Grange and the Farmers' Alliances, sprang up to press for the agrarian point of view. Numbered among these organizations were cooperatives, which had appeared before the Civil War and had become especially strong in dairying. While depression hurt farmers in all parts of the country, Eastern farmers, particularly those who made butter and cheese, suffered severely, as production of these commodities expanded in the fertile Midwest. Sorely beset, Eastern dairymen hunted for something upon which to blame their troubles. They fixed upon oleomargarine.

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[5] Ibid., p. 7073.

[6] Matthew Butler, ibid., p. 7149.

[7] William Wilson, ibid., p. 5178.

[8] Poindexter Dunn, ibid., pp. 4917-18.

[9] Ransom Dunham, ibid., p. 7398. See also comment by Joseph McKenna, p. 5166.

[10] Martha C. Howard, "The Margarine Industry in the United States: Its Development under Legislative Control" (Ph.D. dissertation, Columbia University, 1951), pp. 27f; Earl W. Hayter, *The Troubled Farmer, 1850-1900. Rural Adjustment to Industrialism* (DeKalb: Northern Illinois University Press, 1968), pp. 61-81.

A shortage of edible oils in Europe had led to the invention of margarine, and a war had popularized its use.[11] Following in the steps of his own mentor, who had sought to find a butter substitute, Hippolyte Mège-Mouriès, a French food chemist, patented margarine in 1869. His researches had been conducted on the royal farm in Vincennes, owned by Emperor Napoleon III, who personally pushed the quest for a bread spread less expensive than butter and possessed of longer keeping qualities. Just before the outbreak of the Franco-Prussian War, Mège began manufacture of his *beurre économique* in a Parisian suburb, and just after the war the National Council of Health officially recognized the new product as an article of trade, stipulating that it must be marketed as margarine and not as butter. Mège soon sold his trade secrets and foreign patent rights to buyers in a number of nations.

In 1873 the United States Dairy Company of New York City acquired the Mège patent and began producing oleomargarine. Shortly before this another New York concern had begun manufacture using a different process. Indeed, from 1871 onward, many American inventors appeared at the Patent Office with plans for butter substitutes. Some 180 patents were applied for and thirty-four granted prior to enactment of the 1886 law.

Almost from the start, dairymen felt uneasy and angry about the new competition, a mood converted into state regulatory law, begun in 1877 by New York and Pennsylvania, the two Eastern states where dairying was strongest, then imitated by a score of other states.[12] Effective enforce-

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[11] The discussion of the invention of oleomargarine and its introduction into the United States is based on Howard and Hayter, (n 10 above), and on W R. Pabst, Jr., *Butter and Oleomargarine. An Analysis of Competing Commodities* (New York Columbia University Press, 1937), Edward Wiest, *The Butter Industry in the United States. An Economic Study of Butter and Oleomargarine* (New York Columbia University Press, 1916); J. H. van Stuyvenberg, ed., *Margarine An Economic, Social and Scientific History, 1869-1969* (Toronto: University of Toronto Press, 1969); S. F. Riepma, *The Story of Margarine* (Washington· Public Affairs Press, 1970); Henry C. Bannard, "The Oleomargarine Law. A study in Congressional politics," *Political Sci Q* , 1887, *2* 545-57; and U.S. Department of Agriculture, Division of Chemistry, *Foods and Food Adulterants Dairy Products* (Bulletin No. 13, Part 1; Washington: Government Printing Office, 1887). In this government document a translated text of the Mège patent is cited, pp 10-12.

[12] Wiest, *The Butter Industry*, pp. 241f.

ment machinery, however, was not provided. In 1884 New York passed a law banning oleomargarine completely. The next year the state's highest court declared total prohibition unconstitutional. Such a decision further irritated dairymen, already engaged in the process of redefining the initial oleomargarine challenge into a mammoth, perhaps catastrophic, threat. A handful of Eastern margarine factories had been bad enough. Beginning in 1883, however, the most powerful segment of industry concerned with processing agricultural products, the Chicago packinghouses, had begun to make and market oleomargarine.[13]

In fabricating his margarine, Mège believed he had produced artificially what cows accomplished naturally. Experiments in feeding milch cows persuaded him that butterfat was the cow's body fat transformed by internal chemical processes.[14] So Mège sought to digest beef suet with pepsin or the chopped-up stomachs of cattle. Then he heated and pressed the oil out of this mass. The oil he churned with the finely chopped udders of cows or the equivalent organs of hogs or ewes, adding carbonate of soda, to enhance emulsion, and coloring and salting to make the final product resemble butter. Not all of Mège's patentees adhered to the full complexity of his patented process. When Philip Armour and Gustavus Swift and other Chicago packers entered the American market, they simplified procedures even more, and no patents governed their operations.[15] What lured them was the desire to make profitable use of everything but the pig's squeal. A deodorizing process had been developed to convert leaf lard into so-called "neutral" pork fat, tasteless enough to blend into a butter substitute. More beef fat was also available to be exploited, because a change in public taste—the desire for corn-fed beef—had led to fatter cattle. This fat, removed during slaughtering, was washed in water, cooled by ice, minced by machinery. After settling, the skimmed fat was pressed through cloth to separate the stiffer stearine from the lighter oleo oil. The oil was churned with milk or cream or both, and sometimes, to make a higher grade, with some creamery butter. Butterine, the variant name for oleomargarine preferred by the packers, resulted. Processed

[13] Howard, "The Margarine Industry," p 16, U.S. Senate, Committee on Agriculture and Forestry, *Testimony Taken Before the Committee in Regard to the Manufacture and Sale of Imitation Dairy Products* (Senate Miscellaneous Document No. 131, 49th Cong., 1st sess., serial 2346, Washington, Government Printing Office, 1886), p. 146.

[14] Hayter, *The Troubled Farmer*, pp. 62-63, Howard, "The Margarine Industry," p. 7; U S D.A., Division of Chemistry, *Foods and Food Adulterants. Dairy Products*, pp. 9-12.

[15] Senate Committee on Agriculture, *Testimony . in Regard to . Imitation Dairy Products*, pp. 103, 146, 224-27, 253-55.

beef fat, especially in winter, lacked "the peculiar stickiness . . . of butter" which gave it spreadability, requiring at that season a greater admixture of lard.[16] Formulas differed and varied: the formula for a good grade might be composed of forty percent neutral lard, twenty percent oleo oil from beef fat, twenty-five percent butter, and fifteen percent milk. For reasons of cost, vegetable oils from cottonseed and sesame seed sometimes took the place of part of the neutral lard. Manufacturers packed their product for delivery clear down to the retail level in tubs shaped just like those traditionally used for butter.[17] Consumer cartons did not appear until the twentieth century.

The aggressive marketing of butterine by Packingtown, much of it sold fraudulently at the retail level as butter, intensified ire and fear among dairymen. In February 1886 friends of butter from twenty-six states convened in New York, the delegates representing state agricultural officials, agriculture and dairy societies, and city mercantile exchanges.[18] The bogus butter evil, the convention concluded, could not be confronted effectively without a national law. A committee of five, most of them New Yorkers, was chosen by the convention to formulate a bill and urge it upon the Congress.[19] They did their work swiftly, and a Pennsylvania congressman introduced the measure. In April, after hearings, the House Agriculture Committee presented a substitute bill embodying the main thrust of the New York convention's proposal.[20] In late May and early June, the battle of butter versus oleomargarine engrossed House members through nine straight days of debate, at the end of which H. R. 8328 received approval. A Senate committee also held hearings. After four days of debate in mid-July, the Senate passed the House bill, amended so as to moderate its restraints upon oleomargarine. Because the session was nearing its end, the House, after another day of debate, reluctantly accepted the Senate amendments. President Grover Cleveland, although doubting the wisdom of key features of the bill, nonetheless signed it into law.[21]

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[16] Ibid., pp. 53, 104, Warner Miller, *Congressional Record*, 49th Cong. 1st sess., p. 7073.

[17] Ibid., pp. 5052, 7074, Howard, "The Margarine Industry," p. 20.

[18] *Congressional Record*, 49th Cong., 1st sess , p. 4865; *New York Times*, Feb. 19, 1886; Senate Committee on Agriculture, *Testimony . in Regard to Imitation Dairy Products*, p. 238

[19] William L. Scott, *Congressional Record*, 49th Cong., 1st sess., p. 2193

[20] Ibid., *passim* The House Committee on Agriculture made a report: *Illegal Sale of Imitations of Dairy Products* (House Report 2028, 49th Cong., 1st sess., serial 2441)

[21] Ibid , p. 7919.

Friends of the dairymen, in taking their stand, invoked an ancient myth dating from classical Rome, employed over and over again through the centuries when economic change threatened dislocations in society.[22] Americans had relied heavily upon the myth in the days of the Revolution, and now during the three weeks of Congressional debate on the oleomargarine bill, the agrarian myth undergirded the case for butter against its "greasy counterfeit."[23]

The farmer has "a primal right" to redress of his grievances, said William Scott of Pennsylvania, the congressman who had introduced the oleomargarine bill, because he is the source of the nation's strength, stability, patriotism, and morality.[24] He is "never aggressive, but always patient. His hours of toil are not limited to the period between the rising and the setting of the sun; he suffers hardships in his battles with nature, but his struggles are the struggles of peace; he is always law-abiding and never fractious." Men of this stamp in a "country . . . distinctively adapted to agricultural pursuits" had speedily achieved "magnificent results." In peace and war, noted an Illinois congressman, farmers had been "the source of all our national prosperity."[25] "From the standpoint of economics purely and upon the strictest business principles," added Robert M. LaFollette of Wisconsin, "the interests of agriculture are the interests of this Government."[26]

Seth Milliken of Maine echoed this sentiment.[27] Agriculture had been "the very father and mother of all industries." More than that, the farmer furnished the city its very manhood. "The strong man comes from the country, where, bred in the pure air, he acquires strength and vigor. He comes to the city, but in its turmoils and cares and interests he exhausts his manhood and his strength. He can not reproduce himself. The country that sent him must send another in his place."

The year 1886 witnessed violent turmoil between capital and labor. "The farmers," Milliken believed, "are the conservative force of the country, to be relied upon in[such] times of excitement which threaten the good order and safety of society . . . . Amid the mutterings and threatenings and bloody collisions in our great cities who does not see the wisdom of strengthening this great conservative element of our nation, the thinking, reflecting, intelligent, patriotic farmers?" It had been farmers, Senator William Evarts pointedly observed, who two decades earlier had borne "the brunt of war" to "save the Republic."[28]

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[22] Howard Mumford Jones, *O Strange New World* (New York. Viking Press, 1964), pp 227-65; William D. Little, "'Virtue and Liberty': An inquiry into the role of the agrarian myth in the rhetoric of the American Revolutionary era," *South Atlantic Q.*, 1978, *77* 14-38.

[23] Thomas Palmer, *Congressional Record*, 49th Cong., 1st sess , p. 7088

[24] Ibid., pp 4865-66.

[25] Albert Hopkins, ibid., p. 4867

[26] Ibid., appendix p. 225.

[27] Ibid., p 5042.

Farmers were home owners, LaFollette noted.[29] "Such homes, no matter how humble, are pledges of the perpetuity of the nation. Our little modest homes scattered over this land, reared by those who live in them, are pillars of strength which lift this government above other nations in the civilized world."

LaFollette proceeded to argue how vital dairying had become, not only for providing a few home comforts, but even for the security of the home itself. Income from milk and butter, for many farmers, made the difference between breaking even and falling behind. A number of other congressmen argued the crucial importance of manure from the dairy herd as fertilizer for the fields of grain, although the word "manure" was not permitted to besmirch the *Congressional Record,* euphemisms always being employed.[30]

LaFollette, speaking during his first term as a member of the Congress, did not, in a long and powerful oration, let the word "oleomargarine" besmirch the *Record* either.[31] It posed too great a threat to the farmer, too massive an evil to society, even to name.

"The dairy interest," LaFollette told his colleagues, ". . . has been driven to the wall and is to-day fighting for a place to stand. It is set upon from all sides by an unseen foe. It is struck from behind. It is taken in ambush."

To LaFollette the contest was no mere ordinary competition between two industries. "We face a new situation in history. Ingenuity, striking hands with cunning trickery, compounds a substance to counterfeit an article of food. It is made to look like something it is not; to taste and smell like something it is not; to sell like something it is not, and so deceive the purchaser." "This monstrous product of greed and hypocrisy makes its way into the home and onto the table of every consumer." Choosing a health simile, LaFollette termed butter's competitor "pitiless as a plague. It wants only one thing: it wants your money—it does not care for your life." "Here is a villainous device," charged the Wisconsin congressman in his peroration, "for making money lawlessly and subtilely eating the heart out of an industry which is to the Government what blood is to the body."

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[28] Ibid., p 7193

[29] Ibid., appendix p. 225.

[30] E.g , ibid., pp. 2028, 7088.

[31] Ibid , appendix pp 223-26.

Numerous other members of the Congress sought to present specifics to document the kind of charges which LaFollette had leveled. Some of butter's champions granted that the depression in agriculture owed something to "the dullness of the times"[32] and to the challenge American exports were meeting in Europe as a result of construction of the Suez Canal and the invention of steam power, which "brought the wheat fields and the cheap labor of the Indies into serious competition with the enterprise of our own country."[33] But congressional spokesmen for butter sought by rhetoric and statistics to make oleomargarine assume the major blame for present woes and threatened doom. In less than a decade, they asserted, oleomargarine had replaced a fifth of the butter sold in the domestic market, and exports of butter had declined almost by half in the last five years, while exports of margarine had doubled.[34] A major part of this export disaster, it was argued, resulted from Europe's legitimate suspicion that much of what passed for butter going overseas was really oleomargarine. Profiting from this suspicion, Canadian firms bought butter cheap in Boston and sold it dear in Europe as butter made in the Dominion.[35]

Demoralization in the butter market had tumbled the value of the nation's herds, brought bankruptcy to creameries, forced sheriffs' sales of New York farms, and caused rotting houses in rural New England where, a witness before the Senate Agriculture Committee asserted, the feeling of depression resembled that "of a community seized with a contagious disease from which they think there is no possible escape."[36] The proud American yeomanry faced the fate of brutalized Irish tenants.[37] The despairing farmer would be turned "into the street a vagabond and a tramp,'' soon to appear ''in the front ranks of some labor agitation.''[38] ''Profitable agriculture,'' insisted Michigan Senator Thomas Palmer, constituted ''the foundation and reliance of the system of government and civilization.''[39] If a ''foreign assailant'' should attack such a ''vital part'' of the nation, ''no time would be lost before beating to arms for its defense.'' If dairying broke down, Senator Miller predicted forebodingly, ''you break down the whole country with it.''[40] When bankrupt farms passed into the hands of capitalists, democracy tottered and ''aristocracy or . . . monarchy'' loomed.

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[32] Warner Miller, ibid , p. 7080.

[33] William Scott, ibid., p 4867.

[34] Scott, ibid., and Stephen Millard, ibid , p. 4855.

[35] William W. Grout, ibid., p. 4933; Senate Committee on Agriculture, *Testimony . in Regard to . . Imitation Dairy Products*, p 27.

[36] *Congressional Record*, 49th Cong., 1st sess . William Scott, p. 4866; David B. Henderson, p. 4908; Milo White, p. 4939; Warner Miller, pp. 7079, 7081, Senate Committee on Agriculture, *Testimony . in Regard to . Imitation Dairy Products*, pp. 7-8 and 27-28 The cited witness was S. P Hibbard, a Boston butter and cheese commission merchant.

[37] Warner Miller, *Congressional Record*, 49th Cong., 1st sess , p. 7081

Who were the villains in this imminent tragedy? Congressman Hugh Price of Wisconsin called them ''the scalpers of the city, . . . fat, sleek, kid-gloved gentry who manipulate boards of trade,'' who already had cornered pork, lard, wheat, oats, corn, and butter and soon would ''try to get a corner on salvation.''[41] ''I would sooner trust a Winnebago Indian with a jug of whisky,'' Price told the House, ''as trust to the Chicago Board of Trade any question relating to the interests of the farmer.'' Other friends of the farmer aimed their animosity more directly at the Chicago manufacturers of oleomargarine, operating under ''the black flag of organized piracy.''[42] Five or six men monopolized slaughtering and soon would dominate margarine production.[43] Thirty oleomargarine manufacturers had the power to destroy American agriculture. One man in a single factory could make more margarine than all of the butter that all of New York's farmers could produce. ''This is a fight,'' one witness testified, ''between 7,500,000 agriculturists and a score and a half of capitalists . . . who would see the world sink if they could get a golden canoe to float to heaven in."[44]

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[38] William Grout, ibid., p. 4933.

[39] Ibid., p. 7086

[40] Ibid., p 7081. R. M. Littler, an Iowa farmer who had become secretary of the Chicago Produce Exchange and a spokesman for the National Dairy Association, in similar vein, told the Senate committee: ''Gentlemen, when the plow rusts in the furrows and the farmer's mortgage is foreclosed, God help America, God help the United States. Murray Hill may shine for awhile; New York, with her summer resorts and her broadcloth, may get along for awhile; but we, gentlemen, who own but one suit of clothes, we men who live and toil upon the prairies, we men who suffer and endure everything and have endured everything that we may have a country and have a commerce, if we are to be crushed by this hideous fraud, then I say, God help America.'' Senate Committee on Agriculture, *Testimony . . in Regard to . . Imitation Dairy Products*, p. 137.

[41] *Congressional Record*, 49th Cong., 1st sess , pp 4928-30

[42] F. K. Moreland, counsel for the American Agricultural and Dairy Association, Senate Committee on Agriculture, *Testimony in Regard to . . . Imitation Dairy Products*, p. 237 See also testimony of G. W. Martin, ibid., pp 31-34, who introduced an anti-Semitic note, referring to the New York oleomargarine makers as Jews

[43] Warner Miller, *Congressional Record*, 49th Cong., 1st sess., p. 7081.

Oleomargarine's champions sought to ridicule and explode the farmer's mighty myth. As with the golden calf in the days of Moses, jeered a Chicagoan, farmers strove to erect "an altar . . . for the worship of the dairy cow."[45] "This is a campaign," asserted Packingtown's representative in the Congress, "made out of a farmer's panic."[46] Butter spokesmen might proclaim agriculture's unanimity behind that product. But, in truth, opponents of the bill insisted, thousands of farmers in the South and West condemned the measure, realizing it would injure their interests.[47] This was especially true of farmers who raised cotton, wheat, corn, and hogs and cattle for meat. "Why," queried a Delaware Senator, "should we protect the udder of the cow at the expense of her ribs?"[48] Dairy farmers, their opponents charged, distorted the economics of the situation. Everything except gold was cheap, and dairymen should not blame oleomargarine for the results of a stagnant economy.[49] Butter prices, in fact, had held steadier than those of other agricultural products.[50] For dairy interests to wield their political power so as to cripple margarine, argued a West Virginia congressman, set a dangerous precedent which in the future might rise to haunt them.[51]

Oleomargarine's friends, moreover, pitted against the yeoman farmer's ancient and sacred status at the center of society the imperatives of advancing technology. "Can Congress prohibit men of science from making new discoveries?" asked "Pig Iron" Kelley of Pennsylvania.[52] "Can it prohibit ingenuity from making new inventions?" "The march of improvement lays a heavy hand upon some industries and builds up others," testified a member of the Chicago Live Stock Exchange.[53] "Paths of commerce change and vast cities go into decay . . . . Such has been the history of the world . . . . [T]he dairyman is only having his share of the burden of civilization." Senator Zebulon Vance of North Carolina expanded on this theme: "A hundred things during . . . [my] own lifetime . . . have been invented and brought into general use that conflicted seriously with some established product of manufacturers or have absolutely driven it out of existence. That has been the result of what we call the advancement of science. If now every time that science makes an improvement in our condition, or adds anything to the common comforts and support and civilization of mankind, the industry which is supplanted by that improvement has to be supported and carried along by public taxation, . . . had we not better abandon all attempts to promote science and be done with it? Had we not better abolish our Patent Office and . . . our Geological Survey, . . . our Coast Survey, our Agricultural Department, and all the other methods of pursuing and promoting science which we now spend so much money upon, if the result is to be that every disabled and broken-down product the manufacture of which is supplanted by advancing science is to be supported by public taxation? . . . If we carry our dead with us we shall travel neither far nor fast."[54]

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[44] R. M. Littler, Senate Committee on Agriculture, *Testimony . . in Regard to . Imitation Dairy Products*, p. 134.

[45] Irus Coy of the Chicago Live Stock Exchange, ibid., p. 181.

[46] Ransom Dunham, *Congressional Record*, 49th Cong., 1st sess., p. 7938.

[47] Richard Coke, ibid., p. 7085. The oleomargarine controversy helped prevent farmers from developing a united front H. Clarence Nixon, "The cleavage within the Farmers' Alliance Movement," *Mississippi Valley Hist. Rev.*, 1928, *15* 22-33

[48] George Gray, *Congressional Record*, 49th Cong , 1st sess., p. 7130.

[49] George D Tillman, ibid., p. 5124.

[50] Peter Collier, formerly chemist of the Department of Agriculture, Senate Committee on Agriculture, *Testimony . . in Regard to . . . Imitation Dairy Products*, pp. 183-85.

[51] William L. Wilson, *Congressional Record*, 49th Cong , 1st sess , p. 4936

[52] William D. Kelley, ibid., p 4898.

[53] Elmer Washburn, Senate Committee on Agriculture, *Testimony . . in Regard to . . Imitation Dairy Products*, p. 192.

Oleomargarine made of good materials, insisted its supporters, was better than butter. This recent invention, so beneficial to the poorer classes, observed a South Carolina congressman, did not constitute "the first instance where art surpassed nature."[55] Dr. Charles F. Chandler, a medical professor from Columbia College, testifying before the Senate Committee on Agriculture, persisted in taking Mège's stance, that oleomargarine *was* butter, made by a safe new process.[56] He went on to compare the dairyman's frightened fight against margarine with earlier futile battles against technological advance—the opposition by those using woad as a dye to the introduction of indigo, by the providers of wood and charcoal against the use of soft coal.

Butter's champions did not let these arguments go unanswered. Dairymen had no complaints about "the beneficent gifts of science," observed Senator Palmer, but took proper umbrage at a sorry substitute falsely masquerading as the real thing.[57] Oleomargarine was not a "legitimate industry,'' insisted Representative Hatch, but rather ''the monumental fraud of the nineteenth century.''[58] Even if the margarine interests could come chemically close to butter, noted Senator Miller, it did not follow that the manufactured article was as pure and wholesome as nature's product.[59] ''I do not think,'' he analogized, ''that because they are chemically alike any sensible man would . . . feed his horse with the cellulose obtained from sawdust . . . [in preference to] the cellulose obtained from blue grass or fine clover.'' In testifying before the Senate committee, D. E. Salmon, Chief of the Bureau of Animal Industry, introduced a sober tone which would echo far into the future.[60] A new invention like oleomargarine, he warned, ''which introduces a radical change into the manufacture of an article of food which goes upon the table of every family in the land'' might produce an unexpected and ''remarkable effect upon the public health.''

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[54] *Congressional Record*, 49th Cong., 1st sess , pp. 7129-30.

[55] George D Tillman, ibid., p. 5123.

[56] Senate Committee on Agriculture, *Testimony in Regard to . . Imitation Dairy Products*, pp. 67-80.

[57] *Congressional Record*, 49th Cong., 1st sess., p. 7086

Oleomargarine's impact upon the public health provided the most dramatic issue in the great debate. Butter's champions termed margarine a ''midnight assassin''[61] responsible for numerous deaths, a broad range of diseases, and burgeoning national dyspepsia. Filthy fats, assorted poisons, and ''the Lord only knows what''[62] became transformed by chemical legerdemain into a ''counterfeit masquerading in the stolen livery of the very industry it . . . [sought] to overthrow.''[63]

Margarine's very birth, observed Senator Palmer, took place ''[a]mid the horrors of the siege of Paris . . ., when horse-flesh was made palatable by hunger and patriotism, when house pets were sold in the markets for food, when rats were devoured by the gaunt and garbage fought for by the starving.''[64] This grim atmosphere of its origins had clung to margarine ever since. Armour's caldron in Chicago reminded an Iowa congressman of the witches' caldron in *Macbeth.*[65] ''It has reached the point in the history of our country,'' he said, ''where the city scavenger butters your bread.'' Witnesses testifying before a House committee had asserted that ''dead horses, dead cows, and even dead dogs, when they had been shot for hydrophobia, the rotten carcasses of the city, were . . . taken to a rendering establishment . . . where the great bulk of these things were made into 'pure' oleo oil."

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[58] Ibid., p. 5202.

[59] Ibid., p. 7078

[60] Senate Committee on Agriculture, *Testimony . . in Regard to Imitation Dairy Products*, p 217.

[61] Albert J. Hopkins, *Congressional Record*, 49th Cong , 1st sess., p 4868

[62] Stephen C. Millard, ibid., p. 4894.

[63] William Grout, ibid , p. 4933

[64] Thomas Palmer, ibid., p. 7086. See Gerald Carson, ''The siege of Paris,'' *Natural History*, Oct 1977, *86* 69-77

[65] David Henderson, *Congressional Record*, 49th Cong , 1st sess , p. 4905

The filthy fat allegation received frequent reiteration. Senators cited the testimony of Dr. Thomas Taylor, Department of Agriculture microscopist, who suggested that margarine factories might be the destination for drowned sheep and for hogs dead from cholera and from a diet of distillery swill.[66] Eastern butchers expressed the belief that their flyblown waste fat found its way into oleomargarine. As a result of its raw ingredients, charged a North Carolina congressman, margarine was the sort of carrion that only jackals and turkey-buzzards reveled in.[67] If a bill should become law requiring the exposure of oleomargarine's true identity, "the overfastidious hod-carrier, street sweep, . . . [or] boot-black will thenceforth give" stores where margarine is sold "a wide berth, or hold his nose while passing."

Such scurrilous accusations margarine's friends called "simply absurd."[68]

"You do not think," a Senator asked the president of the Stevens Institute of Technology," that "you could make good oleomargarine out of a dead cat or dog?"[69]

"I will stake my reputation . . . ," Dr. Henry Morton replied, "that it could not be done." "An ounce of stale fat put into a ton of good fresh fat," he explained, "will spoil the whole."

Spokesmen for the leading margarine manufacturers also insisted that, unless the fat used was fresh, it was "utterly worthless."[70] Only fresh caul fat from the steer and leaf lard from the hog, they swore, went into oleomargarine. Packingtown's congressman quoted such testimony at length during the House debate.[71] "[W]hat is perfectly good on the side of a beefsteak," said a Boston scientist, "is perfectly good when it is melted out and mixed with salt and milk."[72]

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[66] Warner Miller, ibid., pp. 7087-88, referring to testimony in Senate Committee on Agriculture, *Testimony . . in Regard to Imitation Dairy Products*, pp. 30, 45-46, 128, 133, 154, 220

[67] Wharton Green, *Congressional Record*, 49th Cong., 1st sess., p. 4968.

[68] Henry Morton, Senate Committee on Agriculture, *Testimony in Regard to . Imitation Dairy Products*, p. 60.

[69] Ibid.

[70] George H. Webster of Armour & Co , ibid., p. 113.

[71] Ransom Dunham, *Congressional Record*, 49th Cong., 1st sess , pp 7398-7400.

[72] Ibid., p. 7400, citing James F. Babcock, Boston milk inspector from his testimony before the Senate committee, p. 89.

Butter's friends continued skeptical. Even grant that filthy fats might be eliminated, argued Congressman William Grout of Vermont, that did not mean the course of civilization should be reversed so that Americans ceased to be "a butter-eating people, . . . taking a step backward toward the raw tallow and lard which were the delight of our Saxon ancestors in the forests of Germany."[73] But margarine posed threats other than those related to the freshness of its fat. Over and over again, from the initial House report throughout the entire debate, members of the Congress pointed to poisons listed in patents that had been granted for making oleomargarine, including strong acids and alkalis which might be presumed to deodorize stale and noxious fats.[74] Such ingredients in "bastard butter," asserted Representative Grout, made it "the mystery of mysteries—a far profounder mystery than hash or sausage."[75] "Who will say," he queried, "that the things we eat ought not like Caesar's wife to be above suspicion?" Oleomargarine's constituents did "not comport with our American civilization."

A Virginia congressman agreed.[76] The poor man's cheap food should not introduce "its lurking disease to his children." "Yes, 'cheap food!'" Charles O'Ferrall went on, "The stomachs of pigs, sheep, and calves reduced by acids, and then bromo-chloralum used to destroy the smell and prevent detection of the putrid mass . . . . Yes, 'cheap food' in the shape of putrefaction rendered odorless by a powerful disinfectant. Yes, 'cheap food' in the form of an apothecary's shop in the poor man's stomach!"

Oleomargarine manufacturers and their scientist allies heatedly rejected the charge that poisonous and corrosive chemicals threatened the national digestion. Chemist James Babcock, enforcer of Boston's food and milk laws, before the Senate committee, went down the list of powerful agents named in patents, denying that nitric acid, sugar of lead, sulphate of lime, castor oil, and chlorate of potash were used in the making of margarine as commonly practiced or had been detected by chemical analysis.[77] Professor Chandler of Columbia ridiculed a rumor that workmen in oleomargarine plants had lost their toe-nails because of nitric acid.[78] It was proverbial that Patent Office files were filled with the wild fancies of fools. "Everyone knows," testified a Kansas City cattle raiser, "what a multitude of impractical patents that are never worked under, issue from the Patent Office. The oleo-margarine of to-day is not made under any patent and is not composed of the articles indicated by these theoretical butter-makers, but is made from a few simple and natural true butter ingredients, which are none the less so because they come from the animal in another form."[79] The industry submitted affidavits to the same effect, stating that of the fifty alleged dangerous ingredients cited from the patents in the House report "only three are ever used, and those so changed and improved in character from what the report would lead the public to believe that they practically make the whole list a falsehood."[80]

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[73] *Congressional Record*, 49th Cong., 1st sess., p 4933

[74] Ibid., e.g., pp. 4868, 4894, 4905, 4938, 5047-78, 7187.

[75] Ibid., pp 4932-33.

[76] Ibid., p. 4921.

[77] Senate Committee on Agriculture, *Testimony . . in Regard to . Imitation Dairy Products*, pp. 96-97

[78] Ibid., p. 68

Not fully persuaded by such protestations, butter's champions leveled yet another major health charge against oleomargarine. The "cheap, nasty grease" harbored threatening germs and parasites.[81] A Minnesota congressman cited a scientist at his state university who, in viewing margarine under the microscope, found living organisms, spores, mold, hair, bristles, and portions of worms.[82] Any person who ate "so promiscuous and lively a mixture," the professor averred, ran not only physical but also moral risks. Department of Agriculture analyses were cited to similar effect.[83] Tuberculosis and trichinosis were among the animal diseases thought transferable to man through margarine. Dr. Salmon testified that the heat used in preparing oleomargarine did not reach a height lethal to bacteria and parasites.[84] Congressman Grout spoke shudderingly of plunging a knife-blade into margarine and feeling "the wiggling kick of a million animalcules."[85] In real truth, margarine's opponents kept insisting, the consumer had no protection whatsoever against either oleo's hazard or its fraud. "The four senses which God has given us," bemoaned Representative Lewis Beach of New York, ". . . are completely baffled," nor did the family dining table come equipped with either microscope or reagents for chemical analysis.[86] A North Carolina representative challenged "doubting Thomases" about margarine's danger to authorize medical inquiry into their own ultimate deaths, insisting that the coroner's verdict in most cases might well read "Died of bogus butter."[87]

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[79] Howard M. Holden, ibid., p 199.

[80] Ibid., pp. 224-27.

[81] R. M. Littler, ibid., p 133.

[82] Milo White, *Congressional Record,* 49th Cong., 1st sess., p 4939.

[83] Warner Miller, ibid , pp 7195-96, 7077.

[84] Senate Committee on Agriculture, *Testimony . . in Regard to . Imitation Dairy Products,* p. 213

[85] *Congressional Record,* 49th Congress, 1st sess., p. 5083.

[86] Ibid., p. 4910.

If margarine were as lethal as its enemies proclaimed, countered its supporters, why had not the nation's graveyards required enlarging?[88] Where might be found a single tombstone inscribed "Dead from oleomargarine?"[89] Indeed, did there exist even one authenticated instance of a consumer having been made ill from artificial butter? Pro-margarine scientists—termed knaves and asses by the butter forces[90]—argued that only chemists and physiologists devoid of standing in their professions and paid for their testimony denied oleomargarine's wholesomeness.[91] Animal fat, Drs. Chandler and Morton asserted, contained no germs or trichinae; these were found only in muscle, not used in making margarine.[92] So the alleged bacterial hazard turned out to be a "bugbear."

In truth, argued oleomargarine's supporters, their product equalled the very best butter in healthful quality and surpassed most grades of butter on the market.[93] Margarine possessed preservative characteristics better than those of butter, especially in hot weather. Compared with the cleanliness of oleomargarine factories, noted pro-oleo scientists, the milking of cows and the churning of butter throughout rural America went on in a much riskier bacterial environment.[94] Dr. Morton thought the chance of contracting tuberculosis from butter much higher than from margarine. Nor did the butter bought by the consumer often comport with the idyllic pastoral scene painted by rural congressmen. Sometimes, suggested a Pennsylvania congressman, butter was adulterated with beets, carrots, and potatoes, and often foul rancid butter underwent deodorizing before reaching the consumer's bread.[95] Farm dairies, moreover, bought oleo oil from Packingtown to supplement cream from the cow.

Dairymen practiced even worse hypocrisy, charged margarine's champions. While condemning the producers of oleomargarine for coloring their product, butter makers themselves resorted to dyes. Such a charge provoked a color controversy that not only daubed the 1886 debate but tinted decades of future conflict.[96] To the dairy forces, the dyeing of oleomargarine, naturally "a pure dead white," so that it resembled butter constituted prima facie proof of fraud.[97] "By the use of [the dye] a[n]notto," Senator Palmer said sadly, oleomargarine "is tinted with the rich, golden, buttercup hue which has served as the trade-mark of the choicest product of the herd since that memorable and fruitful day described in Genesis xviii, where Abraham received the messengers of the Lord on the Plains of Mamre: 'And he took butter and milk and the calf which he had dressed and set it before them; and he stood by them under the tree, and they did eat.'"[98]

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[87] Wharton J Green, ibid., p 4968.

[88] George Tillman, ibid., p 4920

[89] Thomas M Browne, ibid., p. 4982.

[90] William Hatch, ibid., p 5203.

[91] Charles F Chandler, Senate Committee on Agriculture, *Testimony . in Regard to Imitation Dairy Products*, p 78 Pro-oleomargarine scientists were also paid for testifying.

[92] Chandler and Henry Morton, ibid., pp. 78 and 56.

[93] James B. Beck and John J Ingalls, *Congressional Record*, 49th Cong , 1st sess , pp. 7137, 7194.

[94] Senate Committee on Agriculture, *Testimony in Regard to Imitation Dairy Products*, p. 64

[95] Andrew G Curtin, *Congressional Record*, 49th Congress, 1st sess., pp 4896-97.

To force margarine to retain its primal whiteness, or to assume some color that distinguished it from butter, seemed to foes of fraud sound policy. At the Agriculture committee hearings, Senator Henry Blair of New Hampshire repeatedly urged this solution on pro-margarine witnesses.[99] Why not, he queried, color oleomargarine red or violet or chocolate? Then all but "blind men" would be protected from dishonesty. Such a step, margarine's supporters responded, would utterly destroy its value. Said Dr. Chandler: "We all want to spread our bread with yellow fat; we do not want to spread it with red fat."[100] Coloring margarine pink or blue or black, declared Dr. Babcock, "would excite a prejudice against it in the minds of everybody."[101] These witnesses, however, could not persuade Blair that his proposal was unsound. "You may take all the other colors of the rainbow," he remarked, "but let butter have its pre-empted color."[102]

What, though, was butter's true color? Oleomargarine's friends posed this query in an effort to embarrass their opponents. Dependent on the diet of cows, butter churned from cream might, especially in winter, decline from a rich buttercup hue to almost white.[103] In late years, a

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[96] The Senate committee hearings furnished the main forum for the color conflict in 1886 Several states were to pass laws requiring either that no color be added to margarine sold within their borders or that it be tinted pink Howard, "The Margarine Industry," p 41; Hayter, *The Troubled Farmer*, p. 73

[97] Warner Miller, Senate Committee on Agriculture, *Testimony in Regard to . . Imitation Dairy Products*, p. 101.

[98] *Congressional Record*, 49th Cong., 1st sess., p. 7086

[99] Senate Committee on Agriculture, *Testimony in Regard to . Imitation Dairy Products*, pp 61-62, 76-77, 93-95, 101, 172.

[100] Ibid , p 78

[101] Ibid., p. 94. Senator Ingalls opposed a ban on coloring oleomargarine yellow on the grounds "that it would not be so pleasant to the taste or so sweet in the stomach if it were colored pink or green or red or any other color " *Congressional Record*, 49th Cong , 1st sess , p. 7150.

[102] Senate Committee on Agriculture, *Testimony in Regard to . . . Imitation Dairy Products*, p. 95.

[103] H W. Hinshaw, ibid , pp. 256-57

Chicago exporter told the Senate committee, the coloring of margarine had forced most creamery operators into dyeing their product. "We now find them going to State legislatures and asking them to prohibit us from using the very article that we have forced into such general use among them." In all justice, he added, margarine makers should insist that butter makers must use a different color from the yellow which the margarine trade had "brought into general use."

On the Senate floor, John Ingalls of Kansas twitted Warner Miller of New York by reading the label of a commercial butter dye, guaranteed to impart to "white butter a beautiful dandelion color."[104] Ingalls dilated so long and contemptuously on the "bucolic honesty" of the rural dairyman that he quite roused Miller's ire. The Kansas Senator's performance reminded the New Yorker of "a man standing in a wagon auctioning off . . . bogus jewelry, [or]offering to the people some elixir of life." Equal bitterness during the debate occurred on only a few other occasions when Northern congressmen, irked by Southern opposition to the bill, waved the bloody shirt.[105] And an Iowa representative, changing the axis, announced that "the Western country demands and will have protection—by argument if need be, but by war if necessary."[106] When challenged he retreated, saying he meant a battle not of arms but of "intellectual weapons."

The bill before the Congress had nothing to do with margarine's color, although the nation had by no means seen the last of that matter. Margarine's foes had determined that the best way to end fraud and—some agrarians obviously hoped—to eliminate butter's competitor completely was through taxation.[107] Besides an annual fee levied on every manufacturer, wholesale dealer, and retailer of margarine, the bill required manufacturers to pay a tax of ten cents a pound. Accurately branded wooden tubs bearing excise stamps took the margarine to the retailer, who must sell the product in wooden or paper packages labeled "oleomargarine." Violators faced heavy fines.

Honest labeling would prevent consumer deception, butter's champions hoped, and the ten-cent tax would cancel oleomargarine's cost advantage over butter. Equally significant, the taxing power seemed a safe, constitutional route to travel in order to reach the goal. As the House report put it, the federal power to levy taxes was too well established to require argument, and such taxes need not be assessed for revenue only, but might also be levied to achieve general welfare purposes, as the Supreme Court had decreed.[108] "It has been held legal to tax playing-cards, proprietary medicines, perfumery, distilled spirits, tobacco and cigars . . . ," said Representative Abraham Parker of New York.[109] "Why is oleomargarine sacred? Why may we tax manufactured whisky and not tax manufactured butter?"

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[104] *Congressional Record,* 49th Cong., 1st sess., pp. 7149-51

[105] Ibid , pp. 4902, 4966, 7076

[106] David Henderson, ibid., p. 4969.

[107] House Committee on Agriculture, *Illegal Sale of Imitations of Dairy Products.*

Opponents sought to answer that question with a number of reasons. The federal government, at the time of the debate, found itself in the unusual and embarrassing position of having a surplus of revenue over expenditures.[110] So, opponents argued, a new tax on oleomargarine was surely inexpedient. Indeed, a move had already gained ground, supported by both major political parties, to cut the excise taxes left over from the war.[111] In any case, why should licensing fees for a wholesome food be set at many times the rate existing for liquor and tobacco?[112]

The central argument with which critics opposed taxing margarine rested on the bill's alleged unconstitutionality. The measure, argued Senator Richard Coke of Texas, proposed a "wrongful and fraudulent use of the taxing power," not sanctioned by the Constitution because it improperly sought to control intrastate business.[113] Even the key Supreme Court decision relied on by the bill's sponsors, asserted a representative from Georgia, did not apply, for in it the Court had made plain that the taxing power could not be used for ends inconsistent with those given to Congress by the Constitution.[114] And taxation did not constitute the true purpose of the proposed legislation. That goal was simply to eliminate oleomargarine.[115] Such a purpose prostituted the taxing power. It was a "monstrous" theory, charged Nathaniel Hammond of Georgia, that proposed taxation as the weapon to let one Yankee industry destroy another.[116] Such constitutional doctrine, a South Carolina Senator said, approached the abolitionist infamy which had termed that sacred document "a covenant with death and an agreement with hell."[117]

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[108] Ibid The Supreme Court case cited was Veazie Bank v. Fenno, 8 Wallace 533.

[109] *Congressional Record*, 49th Cong., 1st sess , p 5078.

[110] Ibid., pp. 4897-98, 5339, 5343, 7070, 7084

[111] Ibid., pp. 4916, 7130-32, 7186, 7200.

[112] Elmer Washburn, Senate Committee on Agriculture, *Testimony . in Regard to . . Imitation Dairy Products*, p. 191.

[113] Richard Coke, *Congressional Record*, 49th Cong., 1st sess., p. 7083-86.

[114] Nathaniel Hammond, ibid , p. 4869.

[115] John H. Reagan and Isham G. Harris, ibid , pp 4870, 7133.

[116] Ibid., pp. 4895-96, 4869.

Grant that oleomargarine might be constitutionally taxed, argued strict constructionists, then behold the fearful future. "No precedent so vicious" as this bill, if it should become law, said Senator Coke, will have "ever been placed on our statute-book."[118] It ends the free market of supply and demand and initiates interest-group politics. Beet sugar forces will beseech Congress for a tax on cane, wheat growers for a tax on corn, horse raisers for a tax on mules. Some day someone may even seek a tax on natural gas. "If we once . . . take charge of everything that is fraudulent and injurious to the public health," asked Senator Vance, "where shall we stop?"[119] Congress might have to control the New England fishing industry which turns Canadian red herring into French sardines, keep kaolin out of candy, chicory out of coffee, and ban the sale of green apples and watermelons. Congress might even be called upon, predicted another congressman, to tax all foods eaten above a level deemed desirable for health.[120]

It was in countering such mainly Southern charges that Northern congressmen sometimes felt tempted to wave the bloody shirt. William Hepburn of Iowa, in one instance, spoke of John Reagan of Texas as a man who could "in the morning take an oath to support the Constitution and before night begin to plot against its integrity and seek to overthrow it."[121] In the main, however, butter's champions presented oleomargarine as a new kind of problem of such urgency and magnitude as to overwhelm earlier constitutional restraints. The obstructionism of strict constructionists exasperated them. "[I]f a hostile band of Indians was on its way to the capital," suggested Congressman Price, and a measure was before the House to provide for the common defense, and you would appeal to . . . [Congressman Reagan] for a plan of safety, he would study the Constitution to learn his duty, until our several scalps would be found gracefully dangling from their savage belts."[122]

The states had tried to grapple with margarine's evils, the argument ran, and had utterly failed.[123] Only the federal government possessed the power to provide relief. "Desperate cases," said Senator Palmer, "require heroic treatment."[124] LaFollette in the House and Evarts in the Senate presented learned discourses on broad construction to defend the bill's constitutionality.[125] "If there ever was a time in the history of this Government," LaFollette concluded, "when the essence of the great protection principles should be applied—when this body was solemnly commanded to use its delegated powers for the general good, this is the hour." Other proponents of the bill echoed this theme.[126] Even one Southern member of the House, Wharton Green of North Carolina, thought elastic construction legitimate to benefit the poor, among whom he counted himself.[127] "I am tired of having my guild construed into drudges," he remarked, "and their hard earnings . . . into the pockets of moneyed upstarts who spin cotton and roll steel . . . [and] sneer upon the farmer class and flaunt their poverty in their face." And now when the farmer seeks "this poor modicum of relief . . . he is met with the hackneyed . . . cry of class legislation and constitutional infraction. Down with such sophistry; to the dogs with such quibbling."

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[117] Matthew C Butler, ibid , p 7148 A number of opponents of the bill—Richard Coke, George Vest, James Beck, Nathaniel Hammond—delivered learned discourses on conservative constitutional theory.

[118] Ibid , p. 7085. Professors as well as members of the Congress could view the future with alarm from the perspective of the precedent of this bill. Bannard, "The Oleomargarine Law "

[119] *Congressional Record*, 49th Cong., 1st sess., p. 7129

[120] Poindexter Dunn, ibid., p 4919.

[121] Ibid , p 4902.

[122] Ibid , p 4928

Grout of Vermont, gazing toward the future from a perspective contrary to that of strict constructionists, saw a differing vision: "[A]s our population becomes denser and our commercial rivalries sharper and our accumulated wealth greater, who can tell how this paternal authority of the National Government may be used to allay these rivalries, to check the greed of monopolies, to protect one State against the fraudulent products of another, and bring all departments of our domestic commerce, which is but the sum of our domestic industries into such relations with each other that each part shall contribute to the vigor of every other part and thus create a harmonious system."[128]

To the strict constructionist's dictum, "Congress is nobody's doctor,"[129] a dairyman could answer: "I have a high regard for the Constitution of the United States, but a much higher regard for my own, and the

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[123] Ibid , pp. 4865, 4872, 4894, 4910, 5041, 5205, 7081

[124] Ibid , p. 7088.

[125] Ibid , pp appendix 225-26 and 7192-93

[126] E g , William Scott and Joseph R. Hawley, pp 4867, 7188.

[127] Ibid., pp. 4967.

[128] Ibid., p. 4935.

[129] Nathaniel Hammond, ibid., p 4869.

Constitution will not suffer one-tenth as much by the passage of this bill as the public health will suffer if it is not passed."[130]

And passed the oleomargarine law finally was, although butter's more strident champions had been forced to give considerable ground before victory.[131] The Senate cut the tax per pound on oleomargarine from ten cents to two. And in the latter stages of the debate margarine almost ceases to be castigated as a monstrous new evil requiring complete annihilation and comes to be regarded as a legitimate article of commerce if cleanly made and honestly purveyed. Such a change came grudgingly on the part of the butter interests, whose continuing suspicion, combined with their political potency, cause oleomargarine to be the most continuously regulated of any single food. The 1886 law becomes merely the first chapter of a very long book.[132] Not until 1950 was the federal tax repealed.

The 1886 debate also serves as the curtain raiser to a broader drama. "Fraud exists everywhere," Senator Charles Van Wyck of Nebraska asserted during the debate. "That is the misfortune at this time, and the question is how to reach it."[133] The Gilded Age witnessed food fraud extending far beyond the yellowing of margarine.[134] As Dr. Salmon had testified, newly concocted articles of food might pose hazards to the public health.[135] Although broad food bills had been before the Congress since 1879, these had not yet been taken seriously. The oleomargarine debate of 1886 did not make the wider issue a matter of immediate urgent concern, but it increased awareness both within the Congress and within the country. Moreover, that the margarine bill became law set a precedent that Congress could act to regulate foods. The structure of the debate in 1886 set precedents too. When, several sessions later, the Congress undertook to debate broad food bills with a fervor akin to that devoted to margarine, the themes of 1886—the farmer's and the consumer's welfare, fraud, health, constitutionality—echoed again through House and Senate chambers.

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[130] F. K Moreland, Senate Committee on Agriculture, *Testimony in Regard to Imitation Dairy Products*, p. 239

[131] Bannard, "The Oleomargarine Law"; Howard, "The Margarine Industry," analyzes the vote, p. 40.

[132] Howard, "The Margarine Industry," traces that story to the Federal Margarine Law, 64 U S. Stat. 20 (Mar. 16, 1950)

[133] *Congressional Record*, 49th Cong., 1st sess., p 7148.

[134] In commenting on the priority of oleomargarine among foods receiving Congressional attention, Howard, "The Margarine Industry," p. 23, observes· "Margarine conceivably suffered for the sins of many other food products, as well as its own, since it had the misfortune to come on the market at the time when public attention was being directed toward adulteration of foods, particularly of dairy products, furthermore, the pressures brought to bear against margarine by a rival industry were of sufficient strength to drag into the open reprehensible practices, which may not have been of any worse character in this industry than in others of the period. Such practices in some industries went unheeded for a longer time, because they were not felt to threaten competitive industries and because no interested groups were sufficiently entrenched and organized to bring political action " Also, oleomargarine, despite its natural ingredients, developed an evil reputation more than was true of any other product, except perhaps for glucose, as an "artificial" food.

[135] Senate Committee on Agriculture, *Testimony . . in Regard to Imitation Dairy Products*, p 219.

The strategy of 1886 also influenced the future. Butter's friends desired to tax oleomargarine, but they wanted Agriculture committees, not committees on Ways and Means or Finance or Manufactures to consider their bill.[136] The closest call the butter interests had came on a one-vote Senate victory which sent the bill to the Committee on Agriculture instead of to Finance, where it would have died of inaction. So the Internal Revenue Service of the Treasury Department enforced the oleomargarine law. But it was to be the Bureau of Chemistry of the Department of Agriculture which would provide the solid information on which an eventual broader pure food law would rest. Harvey Washington Wiley's division first acquired an "apparatus for photomicrography" in the very year of the margarine law's enactment.[137] The next year Dr. Wiley published the first part of the Bureau of Chemistry's famous continuing Bulletin 13 on *Food and Food Adulterants*. Part One concerned *Dairy Products*, including artificial butter.[138] Wiley himself performed much of the research and drafted the document. Thus began in earnest a campaign which, twenty years after the oleomargarine law of 1886, culminated in the Pure Food and Drugs Act of 1906.[139]

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[136] *Congressional Record*, 49th Cong , 1st sess , pp. 2193, 5339-45. The vote is recorded on p. 5344

[137] Harvey W. Wiley to Norman J Coleman, undated letter printed in U.S.D A., Division of Chemistry, *Foods and Food Adulterants Dairy Products*, p. 3

[138] Ibid. In this bulletin, p 17, Wiley acknowledged that as to oleomargarine's wholesomeness there existed "a wide difference of opinion." "It is undoubtedly true that a great deal of artificial butter has been thrown upon the market that has been carelessly made, and therefore harmful to health On the other hand a butter substitute, made carefully out of the fat of a perfectly healthy bullock or swine, is not prejudicial to health." The shift from an oleomargarine made mainly from animal fats to an oleomargarine made from vegetable fats awaited the introduction in 1915 of a hydrogenation process which gave solidity to vegetable fats at room temperature. Riepma, *The Story of Margarine*, pp. 119-20.

[139] Oscar E Anderson, Jr., *The Health of a Nation Harvey W Wiley and the Fight for Pure Food* (Chicago University of Chicago Press, 1958), James Harvey Young, "Social History of American Drug Legislation," in Paul Talalay, ed., *Drugs in Our Society* (Baltimore. Johns Hopkins Press, 1964), pp. 217-29.

NINETEENTH-CENTURY CRANIOLOGY: THE STUDY OF THE FEMALE SKULL

ELIZABETH FEE

By the 1860s the women's rights movement was being noticed as a potentially serious threat to social order in England. Women were organizing social reform groups, speaking on public platforms, publishing new journals, criticizing marriage and divorce laws and trying to enter exclusively male professions. Educational reformers demanded coeducation and the admission of women to universities. Most disturbing of all, in 1867 John Stuart Mill introduced a women's suffrage amendment to the Representation of the People Bill in Parliament.

In 1868, Paul Broca, one of Europe's most prestigious anthropologists, said they must begin to study the "condition of women in society."[1] Unchecked female militancy threatened to produce a "perturbance of the races" and to divert the orderly progress of evolution. The subordinate position of women had for too long rested on easy assumptions about female inferiority; this inferiority must now be scientifically investigated.

The men of the London Anthropological Society agreed that the doctrine of the intellectual equality of women was an absurdity; such "foolish and mischievous flattery" of the other sex violated nature and would have "a most baneful effect in unsettling society."[2] Reformers like Mill were seen as petty tyrants seeking to remake women in their own image; the good mothers of England must be protected from their machinations. Echoing Broca, McGrigor Allan, a rather undistinguished member of the

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[1] Paul Broca, "On anthropology," *Anthrop. Rev.*, 1868, *6*. 50.

[2] Nature and society were usually closely identified in discussions of sexual equality: "Any effort to obliterate this difference [between the sexes], or to assimilate the nature of the two, by engaging either in the pursuits proper only for the other, are but attempts to violate nature and as such can never be successful, except to prove the folly and futility of all such exertions." George Harris, *J Anthrop. Soc* , 1869, *7*. cxcv. The feminist movement opposed the interests of both Nature and society: "No distinctions in the minds of men and women! Nature flatly contradicts the absurd assertion, and warns against encouraging this foolish and mischievous flattery of women . . . As it is these doctrines have a most baneful effect in unsettling society . Thousands of years have amply demonstrated the mental supremacy of man, and any attempt to revolutionise the education and status of women on the assumption of an imaginary sexual equality, would be at variance with the normal order of things, and as Dr Broca says, induce 'a perturbance in the evolution of races.'" J McGrigor Allan, *J Anthrop Soc* , 1869, *7*. ccxv, ccxiii.

London Society, urged his colleagues to turn their scientific talents to this social problem: "The assertions and claims put forward under the term "Woman's Rights," are a challenge to anthropologists to consider the scientific question of women's mental, moral, and physical qualities, her nature and normal condition relative to man. Nowhere, then, can this question be more appropriately and profitably discussed than in the Anthropological Society."[3] A number of anthropologists set out to use their scientific knowledge and status to attack the arguments of the proponents of female emancipation. Why were they so eager to do so?

The profound fear of the "masculine woman" cannot here be analyzed; in lieu of psychoanalytic or political interpretations we shall simply accept Allan's contention that a masculine man, "a big, rough, hairy, he-creature, brave as a lion, strong as a horse, with the digestion of an ostrich, and a beard like a bull-buffalo's," would want a "soft, gentle, yielding, thoroughly feminine woman" and would therefore be ill-disposed towards the noisy feminists.[4] In the guise of defending true womanhood, the English anthropologists wanted to protect women from the false doctrines of reformers by presenting the true facts and natural laws which governed woman's role. Indeed, the emotional level of the debate demanded that balance be restored by the cool light of objective reason, and science appeared as the incarnation of rationality and objectivity to the scientists involved. It was obvious to them that the social reformers were anti-scientific. Either the reformers were ignorant of, or afraid of, the facts of anatomy and physiology, for these were seldom mentioned in feminist tracts. Instead, their arguments were couched in abstract terms, such as "justice," "freedom," and "humanity." Concepts of this sort had no place in a scientific vocabulary; it was argued that such language could be used to justify any absurdity: "the very same argument which would introduce woman to man's occupations on the ground of her humanity, would introduce whales on the ground of their mammality, or sticks and stones on the ground of their entity."[5] The scientists believed they were combatting a "metaphysical priesthood" which advocated the "unnatural revolution of the sexes in blind obedience to a purely metaphysical proposition."[6] In contrast, the anthropologists said they wanted simply to assign woman her true place in nature, so that she could live in accordance with her biological destiny. That biological destiny was motherhood; women must be made to understand that motherhood was incompatible with intellectual pretension, economic competition, or the vote.

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[3] J. McGrigor Allan, "On the real differences in the minds of men and women," *J Anthrop Soc*, 1869, 7 cxcvi.

[4] Ibid., p. ccii.

[5] Luke Owen Pike, "On the claims of women to political power," *J. Anthrop. Soc*, 1869, 7. lvi

[6] Ibid, p. lv.

Since its foundation, the Anthropological Society had refused to admit women to its meetings; indeed, it had earlier broken with the parent Ethnological Society over precisely this issue.[7] A few scientific societies had begun to admit women as members and had thereby endangered their scientific status: the presence of women made the proceedings seem less serious, if more popular. But the anthropologists were also concerned to increase their popularity and revenue, and one of the best ways to do this was to encourage the discussion of controversial political questions. Many members wished to make their science relevant to contemporary social and political issues; anthropology was to be a "practical" science in an age of utilitarianism. The women's movement provided them with an ideal practical issue: topical, yet not sufficiently controversial to create deep splits within the society, for in this case, its members agreed on the basic issues. As Luke Owen Pike expressed it: "science, in order to be worthy of the name, must deal with practical as well as speculative difficulties, and I know of no subject on which it ought to give a more authoritative decision than upon the claims of women to political power."[8]

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[7] This claim was made by James Hunt, founder of the Anthropological Society, in his introduction to the English translation of Carl Vogt's *Lectures on Man* (London, 1864). It has been disputed by others, e.g. by Thomas K. Penniman who said, "the break with the Ethnological Society was really on the Negro question": *A Hundred Years of Anthropology* 3rd ed rev (London Duckworth, 1965), p. 91. It seems safe to assume that the controversy over the admission of women was one of the reasons, if not the only one, for the split. Another is that Hunt and his cohorts had lost the battle for control of the Society to its more senior members who were unwilling to countenance the ambitious schemes of the younger men; they therefore turned in frustration to a separate organization. Certainly members of the new Society were outspoken on political questions and took a right-wing position on both the "Negro question" and the "woman question."

Many scientific societies were discussing the idea of admitting women in this period, the Geographical had already done so and members of the Geological Society considered and rejected such a change. The Anthropological Society had a special reason for wanting to retain its all male-status: many of the anthropological discussions concerned sexual topics which could not be mentioned in the presence of women. In the first issue of the Society's *Memoirs*, for example, three papers dealt with subjects taboo for ladies: Edward Sellon, "On the phallic worship of India," *Anthrop Soc Memoirs*, 1863, *1*. 327-334; W. T Pritchard, "Notes on certain anthropological matters respecting the South Sea Islanders," ibid., pp. 332-326; Richard Burton, "Notes on certain matters connected with the Dahoman," ibid., pp. 308-321.

[8] Luke Owen Pike, "On the claims of women to political power," *J Anthrop Soc.*, 1869, *7* xlvii.

George Harris, President of the Anthropological Society of Manchester, took up this challenge in 1869 in a paper entitled "On the distinctions, mental and moral, occasioned by a difference of sex."[9] In a rambling discourse on sexuality and generation, Harris introduced Adam and Eve, the angels, and the vegetable and animal kingdoms, before concluding that "the superiority of the male to the female is everywhere seen" and that both God and Nature approved of sexual distinctions. But Harris lacked appropriate and up-to-date scientific data to demonstrate his conclusions; his main authorities were the book of Genesis, Aristotle, and Buffon. The anthropological audience found this paper unsatisfying; one member termed it "a correct moral essay, replete with truisms,"[10] but it was evident that more solid scientific evidence was needed to substantiate the inferiority of women.

In the same year, Luke Owen Pike, a member of the London Anthropological Society, offered a promising suggestion: to investigate the nature of the female mind. Body and mind were understood to be interdependent; must not woman's intellectual capacity be as different as her anatomy? "If there be any truth in science," Pike warned, "the intellect of woman not only has but must have, a certain relation to her structure; and if it could be shown that there exists no difference between the male and female minds, there would be an end of Anthropology."[11]

McGrigor Allan in his 1869 paper, "On the real differences in the minds of men and women"[12] followed this lead. Agreeing with Alexander Walker, he said that women's brains were analogous to those of animals: in them the organs of sense were overdeveloped to the detriment of the brain proper. This explained the observed fact that women were sensitive and emotional, less guided by reason than men. If women were to be educated, their innate intuitive faculties might be destroyed. In the midst of these speculations, Allan suddenly presented "facts"—figures for the proportions of the female skull taken from the new English translation of Carl Vogt's *Lectures on Man.*[13] From these data he concluded that "the type of the female skull approaches in many respects that of the infant, and still more that of the lower races."[14] This last observation captured the attention of the anthropologists. Skull-measurement was a well advanced specialty within anthropology, dignified by the name of "craniology." Perhaps craniology was the tool with which scientifically to demolish feminist pretensions.

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[9] George Harris, "On the distinctions, mental and moral occasioned by the difference of sex," *J Anthrop. Soc* , 1869, *7* clxxxix - cxcv

[10] W C. Dendy, "Discussion," *J. Anthrop Soc.,* 1869, *7* cxcvi.

[11] Luke Owen Pike, *op cit* (n 8 above), p lviii.

[12] J. McGrigor Allan, "On the real differences in the minds of men and women," *Anthrop Rev* , 1869, *7* cxcv-ccxix The reference is to Alexander Walker's *Beauty Illustrated Chiefly by an Analysis and Classification of Beauty in Woman* (London, 1836), a text popular with mid-Victorian scientists

[13] Carl Vogt, *Lectures on Man His Place in Creation, and in The History of the Earth,* edited by James Hunt (London, 1864), translated from the German· *Vorlesungen uber den Menschen, seine Stellung in der Schopfung und in der Geschichte der Erde* (Giessen, 1863).

Craniology more accurately was a collection of techniques for measuring all possible angles and dimensions of the skull than a science with an articulated theory. It was assumed that important insights would eventually emerge from the tables and charts, angles and ratios compiled in a Baconian orgy of quantification. Measurement was glorified as the essential basis of science; both anatomists and psychologists wanted above everything else to be "scientific."[15] If there was more to craniology than measurement for its own sake, it came from the impulse to create a differential psychology. Earlier psychological theory had been concerned with those mental operations common to the human race; the men of the nineteenth century were more concerned to describe human differences.

Phrenology had been the first form of differential psychology to capture popular attention and had exerted a wide influence in the first quarter of the century. According to the inventor of this system, Franz Joseph Gall, the human mind was composed of a large number of different faculties or abilities, each one of which was separately located in a different part of the brain surface.[16] Since the size of a particular portion of the brain surface was a direct measure of the degree of development of the corresponding faculty, and since the skull faithfully followed the outlines of the underlying brain, the shape and irregularities of an individual skull provided a physical map of that person's set of talents and personality traits. By mid-century, however, physiologists had experimentally shown the functional unity of the cerebrum and thus the untenability of faculty psychology. Phrenology was then relegated to the status of a pseudoscience.[17]

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[14] Allan, *op cit* (n. 12 above), p. cciv.

[15] E. G Boring has traced the growth of measurement in psychology, especially in the schools of Fechner and Wundt, as part of the desire to give psychology an "unassailable scientific status." I find his general argument particularly applicable to craniology: "Quantification is favored by the desire of investigators to claim the prestige of science for their research. Especially has this motivation operated among the psychologists, insecure because of their heritage from philosophy, and thus repeatedly insisting on the scientific validity of their new experimental physiology." E G. Boring, "The beginning and growth of measurement in psychology," *Isis*, 1961, *52* 238-257.

[16] For the original and most complete statement of phrenology, see Franz Joseph Gall and Johann Caspar Spurzheim, *Anatomie et physiologie du système nerveux en général, et du cerveau en particulier, avec des observations sur la possibilité de reconnoître plusieurs dispositions intellectuelles et morales de l'homme et des animaux, par la configuration de leurs têtes* (Paris, 1810-19). References to Gall's work will be to the English edition, translated by Winslow Lewis, *On the Functions of the Brain and of Each of its Parts with Observations on the Possibility of Determining the Instincts, Propensities, and Talents, or the Moral and Intellectual Dispositions of Men and Animals, by the Configuration of their Heads* (Boston, 1835) For a discussion of the phrenological movement and its social and political context, see Oswei Temkin, "Gall and the phrenological movement," *Bull Hist. Med.*, 1947, *21:* 275-321.

Phrenology was abandoned, but some of its central convictions were later incorporated into craniology. First: the brain was the organ of the mind. Second: the cranium formed a faithful cast of the underlying brain, and measurement of crania could therefore be substituted for direct measurement of the brain. Finally, and most importantly, brain size indicated mental ability. Here, the analogy between brain and muscle was often used: as muscular power increased with the size of the muscle, brain power increased with the size of the brain. Indeed, the association between brain size and ability was only strengthened by the defeat of faculty psychology; now that the cerebrum was considered a functional unity, the gross size of the brain could serve as a measure of total mental capacity. Brains could therefore be ranked by size on a single scale of mental power or rational ability.

Phrenology had flourished because of the demand for a psychological theory able to explain individual differences. Craniology, with its single-scaled ordering of crania by volume, was less tailored to the demands of an individual psychology but quite suitable for gross racial comparisons, and it was thus of much practical and political importance. In Europe and in the United States, craniological techniques had been used to demonstrate the constitutional inferiority of black people and had provided a rationale for slavery.[18] In England, for example, James Hunt, while

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[17] The work of Magendie, Flourens and Müller on the experimental section of animal brains seemed to prove the cerebrum a homogenous organ and thus undermined the theoretical basis of phrenology. Faculty psychology had no place in experimental work. Following the discovery of cerebral localization in 1870, the new "scientific phrenology," as it was termed, used the functions of the Bell-Magendie Law—sensation and motion—and not the complex functions of the phrenologists. For a comprehensive discussion of these and related issues, see Robert M. Young, *Mind, Brain and Adaptation in the Nineteenth Century* (Oxford: Clarendon Press, 1970).

[18] The long and unpleasant saga of racial anthropology has been fully documented elsewhere. See, most recently, John S. Haller, *Outcasts From Evolution: Scientific Attitudes of Racial Inferiority, 1859-1900* (Urbana: University of Illinois Press, 1971). Also William Stanton, *The Leopard's Spots: Scientific Attitudes toward Race in America, 1815-59* (Chicago: University of Chicago Press, 1960), Herbert H. Odom, "Generalizations on race in nineteenth century anthropology," *Isis*, 1967, *58*: 5-18, George W. Stocking, "The persistence of polygenist thought in post-Darwinian anthropology," *Race, Culture, and Evolution: Essays in the History of Anthropology* (N.Y.: Free Press, 1968), pp. 42-68.

President of the Anthropological Society in 1863, had written a paper, "On the Negro's place in Nature," in which he argued that "there is no doubt that the Negro's brain bears a great resemblance to a European female or child's brain and thus approaches the ape far more than the European, while the Negress approaches the ape still nearer."[19] Hunt blamed ideas of human equality on an uncritical acceptance of the Bible but asserted that, given the new scientific knowledge, those advocating racial equality could no longer be excused on the grounds of ignorance.

In searching for scientific arguments to combat the women's movement, the members of the Anthropological Society had been unnecessarily casting about in the dark. Craniology, triumphant as a method of racial comparison, was waiting to be put to new applications. Female skulls could now be submitted to the craniological calipers.

The decision to base the anatomical argument for female inferiority on cranial size and shape seemed promising at first. On the average, female brains did weigh less than male brains, and female crania were smaller than male crania. No surprise here: the whole female skeleton was smaller and each bone proportionately so, the cranium being no exception. If intelligence depended on cranial size, women must certainly be less intelligent than men.

This logic had one fatal flaw, which surfaced as the "elephant problem." If either the absolute size of the brain or cranial volume was to be taken as a measure of intelligence, then the elephant and the whale must be the lords of creation. They possessed brains much larger than that of man. Some craniologists tried to finesse the elephant problem by asserting that the relative weight of the brain to the body was the true measure of intelligence. Napoleon's brain, for example, was small on an absolute scale, but large in relation to his body weight. Disturbingly though, some measurements suggested that in relation to body weight, the female brain was larger than the male.[20] Children, females, birds, small monkeys, and

[19] James Hunt, "On the Negro's place in Nature," *Anthrop. Soc. Memoirs*, 1863, *1* 17

[20] Samuel Thomas von Soemmerring, *Vom Hirn und Ruckenmark* (Mainz, 1788), is usually referred to as the first author of this claim. See also, Frederick Tiedemann, "On the brain of the Negro, compared with that of the European and the orang-utan," *Phil. Trans* , 1836, *126*. 497-527, and Carl Vogt, *Lectures on Man*, p. 84. Paul Topinard recalculated Boyd's tables of sex differences in brain weight to show that, in relation to body weight, figures for both sexes were approximately equal (Robert Boyd, "Tables of the weights of the human body and internal organs in the sane and insane of both sexes at various ages, arranged from 2616 post-mortem examinations," *Phil Trans* , 1861, *151*. 241-262) However, Topinard also pointed out that by this index, a person who lost weight would thereby become more intelligent. Paul Topinard, *Eléments d'anthropologie générale* (Paris, 1885), p 530. Other objections to the index had much earlier been raised by Gall, *On the Functions of the Brain*, vol 2, pp. 185-188.

Napoleon must all share the laurels of high intelligence if this indicator were to be accepted. The great French naturalist of the early nineteenth century, Georges Cuvier, had himself wrestled with this problem and had concluded that the best measurement of intellectual ability was given by the relative proportions of the cranial bones to the bones of the face, as a measure of the degree to which the organ of thought prevailed over the external senses.[21] But this suggestion was found equally unsatisfying, for here, too, the birds, ant-eaters and bear-rats proved superior to man.

Thus, neither the absolute size of the brain nor its ratio to body weight seemed satisfactory. Some investigators ignored the problems and continued to work with one or other of these determinants; others shelved the simple measurements and began to look for more complicated but more reliable indices.

The German craniological literature was technically more sophisticated than the English and thus the English anthropologists turned to the Germans for help. The Anthropological Society translated several German papers relevant to human sexual differences in the conformation of the cranium, including the important papers published by Alexander Ecker and Hermann Schaaffhausen in 1868.

Schaaffhausen's paper, "On the primitive form of the human skull,"[22] established a set of criteria by which to differentiate primitive and advanced skulls. He began by postulating that male skulls were more advanced than female ones, just as European skulls were more advanced than those of other races, adult skulls than those of children, and human skulls than those of animals. Those characteristics shown by the skulls of animals, children, women, or the lower races could therefore be regarded as "primitive." A trait possessed by more than one of these latter groups—by both women and children for instance—could be identified with more confidence as a primitive trait than if it were possessed by either group alone. After due perusal, Schaaffhausen found that female skulls had several traits in common with other inferior orders: "the projection of the parietal protuberances, the lesser elevation of the frontal bone, the shorter and narrower cranial base, and . . . the more elliptical dental arch and the inclination to prognathism."[23] These then, were signs of incomplete development.

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[21] Georges Cuvier, *Leçons d'anatomie comparée*, 2nd ed. (Paris, 1837), vol 2, pp 159-162 Cuvier argued that the size of the facial bones demonstrated the extent to which a species (or individual) was dominated by the senses, particularly those of smell and taste. "Les deux organes qui occupent la plus grande partie de la face sont ceux de l'odorat et du goût. Plus les organes de ces deux sens sont développées, plus la face acquiert de volume, plus sa proportion avec le crâne est à son avantage Au contraire, plus le cerveau grandit, plus le crâne qui le contient augmente en capacité, plus il devient considérable en comparaison de la face." ibid., p. 159. Franz Joseph Gall pointed out many of the difficulties and anomalies of Cuvier's scale, among them, the fact that whereas Voltaire and Kant had had large heads and small faces, Montaigne, Leibnitz and Franklin had had large heads and large faces F J. Gall, *On the Functions of the Brain*, vol 2, pp 192-193

[22] Hermann Schaaffhausen, "On the primitive form of the human skull," *Anthrop. Rev* , 1868, *6* 412-431; translated from Hermann Schaaffhausen, *Ueber die Urform des menschlichen Schadels, ein beim anthropologischen Congresse in Paris gehaltener Vortrag, abgedruckt in der Festschrift der Niederrheinischen Gesellschaft fur Natur- und Heilkunde zur funfzigjahrigen Jubelfeier der Universitat Bonn* (Bonn, 1868)

Other investigators agreed with Schaaffhausen's thesis that female skulls were relatively undeveloped while not always accepting his specific findings. His assertion that female skulls were prognathic was one that met with resistance. The term "prognathic" meant that the skulls had a small facial angle; the facial angle being the angle between the facial plane and the plane of the base of the skull. First invented by the Dutch anatomist, Peter Camper, this index was used to arrange the skulls of different races on a scale believed to represent their relative development. European man had the largest facial angle while other races fitted into a descending series leading eventually to the anthropoid apes, whose facial angle was very small. Those skulls which occupied the higher part of the scale were said to display *orthognathism;* those lower down, *prognathism.*

Had female skulls been prognathic, this would have put them on a par with the inferior races. However, in the same year, 1868, Alexander Ecker, in his paper "On a characteristic peculiarity of the female skull, and its significance for comparative anatomy"[24] had found female skulls to be distinguished by *orthognathism.* Rather than concede to women this sign of superior development, Ecker argued that marked orthognathism, being also possessed by children, was in its own way an indication of inferiority. White women were perhaps superior to animals and black men, but they were still no better than children.

According to Ecker, the female skull exhibited several other infantile characteristics, among them the following: smaller absolute size, lesser development of the processes for muscle attachment, smaller facial bones in comparison with the cranium, lesser cranial height, a flatter cranial roof, a more perpendicular forehead, and predominance of the cranial roof over the cranial base.[25] These indices proved woman to be "intermediate in position between man and child." Perhaps not every female skull resembled the infant's but Ecker claimed this as the ideal type: "We need not be surprised that we do not find this female type equally pronounced in every head, just as little as we find in every male figure the masculine habitus. But that this form occurs so well pronounced in heads which we designate beautiful and womanly, proves that this form is typical for the female sex."[26] Ugly women, intellectual women, women with large brains or large facial bones were exceptions, but all could be disregarded as they were not true representatives of the sex. Ecker had succeeded in translating the female stereotype—woman as beautiful child—into a craniological profile. Whenever skulls could be found approximating this type, they could now be identified as female. The vision of woman as child, and thus classed with the lower races in the backwaters of the evolutionary tide, was to prove appealing. The conclusions of Ecker and Schaaffhausen, although their findings with respect to the facial angle had been contradictory, had yet reinforced each other on a deeper, political level: both proved that women were incomplete, undeveloped, anatomically incapable of equality with men.

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[23] Ibid., p. 425.

[24] Alexander Ecker, "On a characteristic peculiarity in the form of the female skull, and its significance for comparative anthropology," *Anthrop Rev.*, 1868, *6.* 350-356 Trans from A Ecker, "Ueber eine charakteristische Eigenthümlichkeit in der Form des weiblichen Schadels und deren Bedeutung fur die vergleichende Anthropologie," *Archiv fur Anthropologie*, 1866, *1.* 81-88

The two conceptions of woman, as primitive and as infant, managed to coexist fairly successfully, without causing significant interpretive tension. Those who demonstrated affinities between woman and child had no real quarrel with those who emphasized her resemblance to the Negro male or Australian aborigine. The female, the child and the "savage" were all closely identified in terms of contemporary stereotypes. Beneath their superficial differences, all shared the same roles and possessed the same psychological characteristics. As F. Pruner, the French craniologist, wrote: "The Negro resembles the female in his love for children, his family, and his cabin" and, again, "the black man is to the white man what woman is to man in general, a loving being and a being of pleasure."[27] James Hunt had cited the latter comment with approval in his 1863 paper on the Negro.[28] Hunt, the President and chief spokesman of the London Anthropological Society, thought the women's movement and the anti-slavery movement equally absurd; since both women and blacks were like children, incapable of looking after themselves, it would be unkind and unwise to force them into an unhappy independence. Black men, like white women, were considered intuitive, but lacking in rational capacity. Each group had to be kept in their proper place, either by threat or education, as they could not function as equals in normal, civilized society. They were, in fact, only benevolent beings when properly trained; for as children could be "little savages," so could women be "vile Amazons" and blacks, uncivilized "brutes."

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[25] Ibid., *Anthrop Rev* , 1868, *6* 351-354

[26] Ibid., p. 355

[27] F. Pruner, as cited by Robert Dunn, "Civilization and cerebral development, some observations on the influence of civilization on the development of the brain in the different races of man," *Trans Ethnol Soc* , 1866, *4* 13-33, footnote p 25; and James Hunt, "The Negro's place in Nature," *Anthrop Soc Memoirs*, 1863, *1* 1-60, footnote p. 39

Ecker's general hypothesis—that female skulls were infantile in form—became a standard of the literature but, in time, his specific results were questioned. He had argued, for example, that the female cranial height was less than the male. Since cranial height was often linked to intelligence, this assertion took on particular significance. Yet it was disputed by John Cleland in his paper of 1870: "An inquiry into the variations of the human skull . . . "[29] Cleland warned that since Kaffirs, Negroes and Australians possessed high foreheads, cranial height could not be regarded as a criterion of superior intellect. Obviously, the European races were superior to these primitive people; the criterion of intelligence must be wrong. To replace cranial height, he invented a new index which effectively demonstrated the infantile state of the female skull and yet did not violate racial propriety. This new measure was the angle between the base line of the skull and the vertebral column. As a child grew older, his head, according to Cleland, became increasingly tilted backwards in order to balance the growing weight of the frontal lobes of the brain and the facial bones. The male cranium was generally tilted back further than the female; the female angle therefore remained closer to that of the child. Cleland thus vindicated Ecker's conclusion, if not his method: "a specially feminine character may be seen to be given to the skull by the persistence of the form of childhood."[30]

Cleland's index never achieved great popularity partly because, working in Ireland, he was isolated from the main scientific centers and produced no students trained in his technique. In addition, the method was tedious and difficult, and the researcher required both the vertebral column and the skull before he could begin measurements. Normally, only the skull was needed for craniological work.

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[28] Hunt, ibid., pp. 37-53. See also citation from J H Van Evrie, *Negroes and Negro "Slavery"· The First an Inferior Race—The Latter, its Normal Condition* (New York, 1861), p 10.

[29] John Cleland, "An inquiry into the variations of the human skull, particularly in the antero-posterior direction," *Phil Trans.*, 1870, *160* 117-174.

[30] Ibid., p. 130.

Simpler techniques were preferred, one of the most popular being the "cranial" or "cephalic index." This represented the ratio of the maximum breadth of the skull to its maximum length. Skulls with a relatively large cephalic index (round skulls) were termed *brachycephalic*, while those with a small cephalic index (long skulls) were *dolichocephalic*. Negroes were believed to be dolichocephalic; Caucasians, brachycephalic. Children, having rounded skulls, were more brachycephalic than adult males. We can see that here, again, women could not win. Either they had long heads and resembled the despised blacks, or they had round heads and thus proved their affinity to children. Craniologists could not decide between these alternatives: Gall and Welcker thought women were dolichocephalic but Weisbach, Mantegazza and Hamy pronounced them brachycephalic.[31] Topinard suggested an uneasy compromise: woman was less dolichocephalic in the dolichocephalic races but also less brachycephalic in the brachycephalic races.[32] By 1887, however, he had concluded that the attempt to separate the sexes by cephalic index had proved unsuccessful and should be abandoned.[33]

The number of cranial angles and indices multiplied at a prodigious rate in the 1870s, 1880s and 1890s in what may be called the Baroque period of craniology. Each person involved in craniological research employed his own favorite measurements and many contributed new ones to the growing number already in existence. One investigator deemed it necessary to take 5,000 measurements on a single skull.[34] Since a given measurement depended on the precise reference points chosen, as well as on the particular instrument used, there existed a tremendous potential for confusion, a potential increased by the fact that over six hundred different measuring instruments were available.[35]

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[31] Paul Topinard, *Eléments*, p. 375 Also, D J. Cunningham, "The fissure of Rolando," *J. Anat Physiol*, 1891, *25* footnote, p. 21: "Welcker, Broca and Calori hold that the head of the female is more dolichocephalic than that of the male . . Weisbach, Arnold and Mantegazza, on the other hand, consider that it is the male head that shows the greatest amount of dolichocephaly."

[32] Topinard, *Eléments*, p. 375.

[33] Ibid., p. 376. Topinard did say that "from reason alone" women should be more brachycephalic, since women were expected to show the craniological characteristics of children, but he also pointed out that this prediction was not confirmed by the data. Further, he raised the general objection that the sex of crania were usually unknown and had to be estimated by the craniologist himself. thus putting all statements on sexual differences in crania under a certain suspicion

[34] Jacques Barzun, *Race. A Study in Modern Superstition* (New York· Harcourt Brace, 1937), p 161

Craniologists would frequently arrive at diametrically opposite conclusions. Often the contradictions arose because they had either been defining their terms differently or had used different reference points for their measurements. Most of the samples used were statistically inadequate; many results would have been invalidated had the investigator had access to a large number of crania. Yet the whole enterprise thrived despite annoying setbacks; as one index failed to measure up to expectations, another appeared, claiming to hold the solution to all earlier problems. Indeed, new techniques and measurements began to appear at an even faster rate than others were relegated to oblivion.

As craniological research became ever more complicated, technical and sophisticated, it seemed to many to have become increasingly alienated from the real issues it had been expected to solve; important social and political questions were being swallowed up in masses of detailed measurements and in endless disputes over methods and terminology. It was less and less clear that cranial measurements had any direct relationship to intelligence. Emphasis had originally been given to the cranium because of its close association with the brain, but the brain itself had become lost in the morass of facial, coronal and occipital angles, mastoid processes, projection maps and all the other trappings of the new scientific specialty.

A warning signal that all was not well with craniology had come in 1881 when E. B. Tylor expressed dissatisfaction in his Presidential Address to the Anthropological Institute: "Many of us who are not profound anatomists, though sensible of the general value of skull measurements as bearing on race, have been apt to think their study in the hands of craniologists running into unprofitable minuteness and complexity of observation . . ."[36] Tylor phrased his criticism tactfully because he knew he was no anatomist and therefore supposedly unqualified to judge the difficulties of the subject. Such doubts did not trouble a later President of the

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[35] Lucile E Hoyme, "Physical anthropology and its instruments. an historical study," *Southwestern J Anthrop* , 1953, *9* 410 For the story of the struggles over the standardization of craniological technique and terminology, see L. H Dudley Buxton and G. M. Morant, "Essential craniological technique," *J. Anthrop Inst* , 1933, *53* 19-47, and G M Morant, M. L. Tildesley, and L. H. Dudley Buxton, "Standardization of the technique of physical anthropology," *Man*, 1932, *32* 155-158.

[36] E. B Tylor, "President's Address," *J Anthrop Inst* , 1881, *10* 453.

Institute, Alexander McAlister—Professor of Anatomy at Cambridge—who bluntly declared in 1892: "craniometric literature is at present as unsatisfactory as it is dull . . . we are forced to echo the apostrophe of Von Torok, 'Vanity, thy name is Craniology.'"[37] In the 1890s Giuseppe Sergi, Professor of Anthropology at the University of Rome, became so disillusioned with craniology that he returned to a qualitative study of skull shapes or used photographs to indicate form; all quantitative measurements had, he believed, proved themselves equally worthless.[38] Alfred Russel Wallace in *The Wonderful Century* (1898) made a damning assessment of craniological achievement: "Enormous collections of skulls were formed; they were figured and accurately measured, were classified as brachycephalic or dolichocephalic, and in various other ways, but nothing came of it all . . . Never perhaps was so much laborious scientific work productive of so inadequate a result."[39]

By the end of the century there was a widespread distrust of anthropological measurements and craniologists were sometimes treated with scorn or amusement. But many still persisted in the belief that with better instruments and more data, some significant results might emerge.[40] One major result of the criticism was the reversion to a small number of simple indices. In this Neo-Classical revival, the linkage between brain size and intelligence was fervently defended even though it also revived old problems. Mental patients, for example, often had very large brains. Topinard explained in 1885 that an abnormal brain development was conducive to both intellectual work and mental instability.[41] Men normally possessed the will and ability to master this danger; women with large brains, being weak and prone to hysteria, tended to die or become mentally ill. To support this "thesis," Topinard cited the case of a female doctoral student, of high brain weight, who committed suicide after failing her exams. He thus simultaneously explained the high female suicide rate, the large numbers of women in mental hospitals, and the absence of women of genius. George Romanes, author of *Mental Evolution in Man* (1889), expressed his views on the mental differences between the sexes in an article for *Nineteenth Century*.[42] Female intellectual inferiority, he said, was a consequence of the "missing five ounces of the female brain": "Seeing that the average brain-weight of women is about five ounces less than that of men, on merely anatomical grounds we should be prepared to expect a marked inferiority of intellectual power in the former."[43]

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[37] Alexander McAlister, "President's Address," *British Association for the Advancement of Science Reports*, 1892, *62* 890.

[38] Giuseppe Sergi's views on this subject were first elaborated in *La varietà umane principi e methodo di classificazione* (Torino, 1893) This appeared in English translation as "The varieties of the human species principles and method of classification," *Smithsonian Miscellaneous Collections*, 1894, *38*. 7-61

[39] Alfred Russel Wallace, *The Wonderful Century Its Successes and Failures* (New York. 1898), p 183

[40] Charles Myers argued in 1903 that biological measurement was only in its infancy and that, despite the critics, this was clearly to be the wave of the future "Indeed, if physical anthropology is to be a science, its results must be capable of expression in mathematical formulae To this end some of the most interesting of the biological work of the age is tending. The traveller and the student of natural history have had their day " Charles S. Myers, "The future of anthropometry," *J Anthrop Inst*, 1903, *33* 38

[41] Topinard, *Eléments*, p 562

With Topinard and Romanes, the argument had come full circle; the long and technical controversies of anthropologists and craniologists had led back to the single idea with which the whole discussion had begun—that women's brains must be inferior and that this inferiority was somehow linked to size.

But in the early years of the twentieth century, antifeminist anthropologists, who still hoped that craniology and brain measurements could prove socially and politically useful, received the final blow from Karl Pearson and his school of biometricians.

Armed with new and refined statistical techniques, Karl Pearson and his students at University College, London, began a searing criticism of craniological dogma. Although fervent believers in biological measurement, this group did not share the older anthropologists' emotional or political fear of women's rights. Quite the contrary: the two Pearson students who did much of the work on head-size and intelligence were Alice Lee and Marie Lewenz, two of the first women scientists in the field. Pearson himself had gained a reputation as a radical and a freethinker; in his youth, he had supported both socialism and the emancipation of women and had taken part in a small group of men "whose avowed purpose was to break down the conventional barriers which prevented free discussion of the relations between men and women."[44]

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[42] George J. Romanes, "Mental differences between men and women," *Nineteenth Century*, 1887, *21* 654-672. By this time, articles published in specialist anthropological journals had become less transparent in their ideological position, authors were less willing to discourse on their feelings about the women's movement. Such opinions, to the extent that they were explicitly stated, were now often reserved for popular articles in the wide-circulation journals. The above article is an example, Romanes says: "Whether we like it or not, the women's movement is upon us, and what we have now to do is to guide the flood into what seem likely to prove the most beneficial channels" (p. 667). He goes on to say that women should be allowed to become educated but not permitted "to set up an unnatural, and therefore impossible, rivalry with men in the struggles of practical life . ." (p. 668)

[43] Ibid., pp 654-655.

These heretics on the "woman question" had the mathematical training and skills formerly unknown in craniology. Pearson had come to the subject as a mathematician; at the age of twenty-seven he had been appointed to the Chair of Applied Mathematics and Mechanics at University College. Induced by Francis Galton's *Natural Inheritance* (1889) to study correlation, he became impressed by the potential importance of mathematics for the study of biological problems. He invented or perfected a whole array of statistical methods: simple linear, multiple, partial, and curvilinear correlations. The new breed of anthropological statisticians scorned competitors without mathematical training; no longer, they insisted, could craniologists be permitted to misrepresent their appallingly amateurish efforts as science. Anthropometry must be brought to a new level of professionalism. It took five years to effect this transformation.

In 1901 Alice Lee published her first paper, "A first study of the correlation of the human skull."[45] She concluded that there was *no* correlation between skull capacity and intellectual power. Since at this time no independent measure of intelligence existed—Galton himself had assumed that social reputation was an adequate index of intelligence—Lee used a simple trick to convince her readers. She printed the names and cranial measurements of three groups: thirty-five (male) anatomists attending the Anatomical Society meeting in Dublin in 1898, thirty (female) Bedford College students and twenty-five (male) members of the teaching staff of University College. Some of the women students from Bedford College had larger cranial capacities than the eminent and respected anatomists; to have insisted that cranial capacity was an accurate measure of intelligence would have been acutely embarrassing. Lee pushed the point home: if cranial capacity and intelligence were not correlated on an individual basis, then racial and sexual comparisons could have no significance. She further showed that an unavoidable error of about 3% existed in all measurements of cranial capacity because of variations in "packing" the sand or seeds used in volume analysis: this 3% was a significant figure because most measurements of sex differences in cranial capacity fell within this margin of error.

Lee's paper came in for considerable criticism and in 1902, Pearson published a paper in her support, "On the correlation of intellectual ability with the size and shape of the head."[46] A comparison of the cranial measurements of Cambridge undergraduates with their examination results had shown no significant correlation. A similar experiment on school children strengthened the conviction that "it is impossible to pass judgment from the size of the head to ability or vice versa." In the same year, Lee, Pearson and Marie Lewenz together answered the numerous criticisms of the first two papers, and they recalculated all their tables to show that if cranial capacity was measured relative to body size, the correlation with intelligence was still more insignificant.[47] A protest by two French craniologists, Vashide and Pelletier, that auricular height rather than the total size of the skull was the true measure of intelligence was summarily dismissed: "Frankly we consider the memoir is a good illustration of how little can be safely argued from meagre data and a defective statistical theory."[48] In 1904 another Pearson student, W. R. McDonell, showed that the only significant sexual distinctions in the form of the skull concerned slight differences in the form of the palate and of the eye orbit.[49]

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[44] Helen M. Walker, "The contributions of Karl Pearson," *J Amer. Stat Ass*, 1958, *33*: 15.

[45] Alice Lee, "Data for the problem of evolution in man—a first study of the correlation of the human skull," *Phil. Trans.*, 1901, *196A*: 225-264

These results might have had less impact had it not been for Pearson's personal influence. Pearson observed no etiquette in rebuffing his rivals and he intellectually horsewhipped those who disagreed with him. Uncompromising in his demands for high standards in craniological work, he set these standards so high that only his students could comply with them. In 1904, he and Lewenz denounced the work of an older generation of craniologists as "dilettantism" and stated that papers uninformed by mathematical statistics were "simply outside the field of science."[50] By 1906, the idea that intelligence was directly linked to skull size or form was dismissed as a pathetic anachronism, a symptom of an earlier, credulous age: "It is impossible . . . to use head size as a basis for judgment as to intelligence. Of course all this is merely stating in words what is obvious to the biometrician, when he finds a low correlation, but possibly, although I am hardly hopeful, it may help to convince the anatomist and old school anthropologist that head measurements are not of real service as intelligence tests."[51] Thus by 1906, Pearson and his students had demolished the craniological enterprise of measuring human intelligence by the dimensions of the skull.

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[46] Karl Pearson, "On the correlation of intellectual ability with the size and shape of the head," *Roy Soc. Proc.*, 1902, *69*. 333-342.

[47] Alice Lee, Marie Lewenz and Karl Pearson, "On the correlation of the mental and physical characters in man, Part II," *Roy. Soc Proc* , 1902, *71* 106-114

[48] Ibid., p. 108. N. Vaschide and M Pelletier, "Contribution expérimentale à l'étude des signes physiques de l'intelligence," *Comptes Rendus*, 1901, *133* 551-553

[49] W. R. McDonell, "A study of the variation and correlation of the human skull, with special reference to English crania," *Biometrika*, 1904, *3* 191-244

[50] M. A. Lewenz and Karl Pearson, "On the measurement of internal capacity from cranial circumferences," *Biometrika*, 1904, *3* 397. The message of this paper could not be clearer: "The day for the old methods is once and forever gone" (p. 368), Barnard Davies' measurements cannot be used for "really scientific work" (p. 377), papers like that of Dr Beddoes "sensibly lower the already low standard of craniometry" (p 397)

The underlying rationale for craniological research had now crumbled. But although craniology as a scientific specialty had collapsed under its own weight, the impulse to create a differential psychology remained. The social and political function of differential psychology survived the demise of the particular form it had assumed within nineteenth-century science. In the twentieth century, it was to take on a new shape: mental testing replaced cranial measurement as a method of ordering human beings in an intelligence hierarchy.[52] This new form of differential psychology is now itself under attack, and a second cycle is almost complete: the emergence of a new science, its growth in complexity through the multiplication of measurements, and its eventual collapse under the weight of its own inherent contradictions.[53]

Craniology and intelligence testing fulfilled similar political functions in reinforcing and rationalizing already existing social divisions. Each has its own history, its own internal logic and internal development which can be viewed and described independently of this political context. Each science creates its own rationality and its own form of objectivity, just as each has its own set of tools and techniques. Each science or scientific sub-specialty is semi-autonomous and particularly in the period of its dominance, appears as the embodiment of rationality and objectivity. Each has its own rules: thus, craniological measurements can be more, or less, accurate. There were craniologists whose research was particularly admired, and whose work was sophisticated, painstaking and careful, and others whose research was less careful, whose techniques were less sophisticated, and whose work was less important. Nevertheless, in the broad perspective, these internal relations of the scientific specialty assume a minor role; more important, are the functions which the science as a whole subserves in legitimizing a given set of social relations. In the case reviewed above, we have seen how craniology served to legitimize and reinforce existing relations between the sexes: the dominance of men, defined as more intelligent and more advanced on an evolutionary scale, and the corresponding subordination of women. And this was only one of a series of social and political distinctions which craniology served to reinforce; equally important, and more generally known, was its function in reinforcing an existing racial hierarchy. It must be stressed that craniology did not in any sense create these social divisions; rather, it reinforced and reproduced them on an ideological level. Yet this function is in itself a powerful one: the sciences hold a special status in the hierarchy of knowledge, a special claim to truth and objectivity not possessed by other disciplines or forms of discourse.

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[51] Karl Pearson, "On the relationship of intelligence to the size and shape of the head and to other physical and mental characters," *Biometrika*, 1906, *5*. 122.

[52] For some of the earliest papers on mental testing, see J McK. Cattel, "Mental tests and measurements," *Mind*, 1890, *15*· 373-380; and A Binet and V. Henri, "La psychologie individuelle," *L'Année Psychologique*, 1895, *11*· 411-415. For the early literature on the use of mental testing to discover differences between the sexes, see Helen Bradford Thompson, "A review of the recent literature on the psychology of sex," *Psychological Bulletin*, 1910, 7. 335-342. An analysis of this form of differential psychology is given in Robert L Watson, "The individual, social, economic and political conditions for the original practices of detection and utilization of individual aptitude differences," *Revue de Synthèse*, 1968, *89*. 355-368.

[53] Arthur R. Jenson's article, "How much can we boost I.Q. and scholastic achievement?" and some of the extensive critiques it has provoked, are reprinted in *Environment, Heredity and Intelligence* (Cambridge, Harvard Educational Review reprints, 1969) and *Science, Heritability and I Q.* (Cambridge, Harvard Educational Review reprints, 1969) While many of these critiques attack the assumptions and statistical techniques used by modern differential psychology, William F. Brazziel clearly shows their political implications in "A letter from the South," *Environment, Heredity and Intelligence*, pp. 200-208

Precisely because of this special status of science, the internal critique of a scientific discipline is important. Karl Pearson, Alice Lee and Marie Lewenz may have had their own ideological reasons for attacking existing craniological research, but their attacks were expressed in the language of that science and spoke to both its underlying assumptions and the inadequacy of its techniques. Their attack was successful in the sense that the old craniological methods were rendered impotent in the establishment of differential psychology.

But the fact that craniology collapsed only to be followed by the reestablishment of differential psychology in a new shape shows that, in a broader sense, it is the underlying social reality that creates the science. As long as there are entrenched social and political distinctions between sexes, races or classes, there will be forms of science whose main function is to rationalize and legitimize these distinctions.

ON THE EVOLUTION OF WOMEN'S MEDICAL SOCIETIES*

CORA BAGLEY MARRETT

Towards the end of the nineteenth century a new type of organization emerged within the American medical profession: the women's medical society. This organization sought to bring the women physicians in a community, who were usually few in number, into a closer fellowship. The idea of cooperation among women interested in health matters had antecedents in the nineteenth century. The Ladies' Physiological Institute of Boston had been founded in 1848, and a few years later a small number of hospitals, dispensaries, and medical schools operated by women appeared. But the formation of the New England Hospital Medical Society in 1878 ushered in the era of the professional association of women physicians.[1]

This new type of organization only developed gradually. Although a few associations of female homeopaths were organized in the 1880s, only one society for allopathic women doctors—the Practitioner's Society of Rochester, New York (1887)—seems to have been founded in this period.[2] During the 1890s the situation changed, and the following medical groups for allopathic women were established:[3]

Woman's Medical Club of Portland (Oregon)	1891
Physicians' League of Buffalo	1892
Woman's Medical Club of San Francisco	1893

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* This is a revised version of a paper read before the 51st annual meeting of the American Association for the History of Medicine, Kansas City, Missouri, May 12, 1978

[1] Several sources cite the New England Society as the first professional women's medical society. See especially Kate C. H. Mead, *Medical Women of America* (New York: Froben, 1933), p. 43, and Bertha Selmon, "Early history of women in medicine," *Med Wom J.*, 1946, *53* 44-48. But in 1870 women in Detroit organized the Woman's State Medical Association (*Wom. J.*, January 29, 1870, 27) A few years later (about 1876-77) a group of faculty and recent graduates from the Woman's Medical College of Pennsylvania formed the Preston Medical Society in Philadelphia (I wish to thank Dr Steven Peitzman for bringing this group to my attention) Both the Michigan and the Philadelphia groups appear to have been short-lived.

[2] During the nineteenth century several medical therapies or schools of practice prevailed. The allopathic or "regular" doctors were those who pursued conventional therapies. The allopaths referred to other practitioners, homeopaths and eclectics, for example, as sectarians or irregulars.

[3] This list omits societies attached to other institutions, such as the alumnae associations.

Puget Sound Woman's Medical Club (Tacoma)	1894
Medical Women's Club of Chicago	1894
Denver Clinical Society	1895
Woman's Medical Club of Cincinnati	1896
Woman's Medical Club of Minneapolis	1898
State Society of Iowa Medical Women	1898

Despite this flurry of activity, by 1900 there were still communities with several women physicians practising but no separate female medical society. Why did such an organization emerge in some communities and not in others? This is the central question of this study. In an attempt to determine the factors governing the development of such medical societies, I selected five communities where an organization of regular medical women was formed between 1890 and 1899: namely Buffalo, San Francisco, Denver, Cincinnati, and Minneapolis.[4] I then matched each city with another which had a comparable number of regular women physicians but had no women's medical society prior to 1900. The comparison cities were Brooklyn, Detroit, Los Angeles, Washington and Indianapolis (see Table 1).

Investigation showed that two conditions seemed to distinguish the cities with organizations from those without. First, in those cities where women's societies developed, a host of male medical associations already existed. These seem to have been communities with a highly organized medical profession. Second, the women physicians who began the early medical groups usually shared certain institutional ties. In contrast to their counterparts elsewhere, these women often had attended the same medical schools or had joined together to operate such service agencies as hospitals or dispensaries.

Women first entered the regular medical profession near the middle of the nineteenth century and throughout the century represented only a fraction of the total number of physicians. The 1880 census—the second one to identify physicians by sex—listed 2,423 women. This represented three percent of all medical professionals. By 1890 the count for women

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[4] I omitted the other four societies for various reasons. For two of them—the Portland Society and the Puget Sound club—I found only fragmentary information. I excluded the Iowa association because it was the only non-city based group Finally, no city without a women's society had a female physician population equal to that of Chicago in 1894. For additional information on the organizational drive before the twentieth century see Cora Bagley Marrett, "Nineteenth-century associations of medical women: the beginning of a movement," *J Am Med. Wom Assoc*, 1977, *32*. 469-474

TABLE 1
FEMALE PHYSICIAN POPULATION IN THE SELECTED CITIES

		All Women Physicians		Regular Women Physicians	
City	Year	Total Women	Women as Percent of all Physicians	Total Women	Women as Percent of all Regular Physicians
Buffalo	1892	25	5	18	5
Brooklyn	1892	60	5	15	2
San Francisco	1893	64	9	35	7
Detroit	1893	38	8	25	7
Denver	1895	28	8	21	7
Los Angeles	1895	28	8	20	7
Cincinnati	1896	58	8	24	5
Washington	1896	41	5	25	4
Minneapolis	1898	32	9	18[1]	7
Indianapolis	1898	40	8	18	5

SOURCE: Figures are based on a count of names as given in various issues of *Polks' Medical Register of the United States and Canada*

[1] This underestimates the pool available for membership in the Minneapolis association, as that group admitted homeopaths as well as regulars.

physicians had nearly doubled (4,557), yet they were still only a small proportion (4.3 percent) of American physicians.

In keeping with the national pattern, Brooklyn, Detroit, and the other cities without an early medical association had relatively few women physicians and even fewer allopathic female doctors. Of the sixty medical women in Brooklyn during 1892 only fifteen, or one-fourth, were allopaths. Similarly, there were only eighteen allopathic medical women in Indianapolis near the end of the century. Yet the paucity of numbers did not explain the absence of a women physicians' association in these cities. Women were greatly outnumbered as well in Buffalo, San Francisco, and the other cities with organizations. In 1892 Buffalo had twenty-five women physicians, seven of whom were in sectarian medicine. The Denver roster of twenty-eight (1895) included six homeopaths and two eclectics. The societies established were small because of the small numbers of women physicians and the non-participation of some who were eligible. In San Francisco, for example, the organizers sent invitations to one hundred and nineteen women, but only twenty-nine joined during the first year of the association.[5] The charter membership was even smaller in

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[5] Invitations were sent to women throughout the Bay Area, including the city of Oakland.

Buffalo (five), Denver (fifteen), and Cincinnati (eighteen). Since the formation of a women's medical society did not depend on there being a substantial number of women physicians in the community, this was not the reason which precluded the formation of a society in Brooklyn and the four other comparison cities.

Although the female physician population was small in both the cities with societies and those without, the possibility existed that they had different patterns of growth. The pattern might have been steady in one group and more sudden in the other. The investigation showed no such difference. In all of the cities the number of women doctors did continue to increase, but the changes were small and rather similar across the locales. During the five years preceding the organization of a given club, the number of regular women in the city with the club and in the city with which it is being compared increased as follows:

Buffalo—9	Brooklyn—4
San Francisco—18	Detroit—19
Denver—12	Los Angeles—10
Cincinnati—18	Washington—15
Minneapolis—9	Indianapolis—9

Thus, the way in which the female medical force expanded was not distinctive in the five communities where the separate societies emerged. Instead, it was the actual growth of medical societies that was different in Buffalo, San Francisco and their counterparts.

In the late nineteenth century, medical societies multiplied rapidly. According to one source, these societies "formed in such profusion, at all population levels, encountered such vicissitudes, and often such oblivion that no one has yet ventured an attempt to render an orderly, comprehensive account of this particular movement."[6]

Such profusion characterized the cities where women's societies were formed. Buffalo, for instance, had more regular medical societies though fewer physicians than had Brooklyn. In fact, eight local societies of regular doctors were already active in Buffalo when the women set up the Physicians' League in 1892. That activity was comparatively recent: five years earlier only three local associations had existed. Likewise, San

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[6] W. B McDaniel, "A brief sketch of the rise of American medical societies," *Int Rec. Med*, 1958, *171*: 489. On the expansion of medical societies also see James Burrow, *AMA Voice of American Medicine* (Baltimore: Johns Hopkins Press, 1963)

Francisco medical men showed great interest in organizing medical societies. In 1893 the city had twice the number of societies to be found in Detroit.

Usually, the city where a women's society developed had more medical groups than had the one with which I have chosen to compare it. This was not true for the Washington-Cincinnati pair, however. Washington had considerably more associations than Cincinnati in 1896. Nonetheless, in proportion to physician population, the Washington profession was substantially less organized than the medical group in Buffalo, San Francisco, or Denver. In general, then, those locales where a woman's society appeared were rich in medical associations.

Apparently, the level of activity among the male physicians influenced the evolution of the women's societies. Through what process might this have occurred? Did women organize because they were excluded from this expanding network of doctors? The results do not indicate this. In those cities where the late nineteenth-century groups developed, women had already gained admission to the larger associations.

By 1890 most medical societies admitted women members, usually after a bitter and protracted battle. The San Francisco Medical Society, for example, in 1874 had soundly rejected an application from a woman physician, Charlotte Blake Brown. Reportedly, some members "felt very strongly that the female of the species was mentally, physically, and morally unfitted to study medicine."[7] The group finally relented in 1877, one year after the State Medical Society had admitted its first women members. The struggle was even more prolonged in Washington. There, Mary Parsons (Howard University, 1873) first applied to the Medical Society in 1876. She failed to gain admission and reapplied in 1878, 1879, and 1888. Her application was finally accepted, but it would be another three years before a second woman won admittance.[8]

In spite of these difficulties, by the last decade of the century, in San Francisco and Detroit, in Cincinnati as well as Washington, women were able to join the general medical societies. And some usually did. In fact, the women's group often counted among its members an officer from an established medical society. Consider both the Minneapolis and Denver associations. In Minneapolis, Bessie Haines was treasurer of the State Medical Society at the same time as she helped organize the women's club. In Denver, Mae Cardwell was serving as secretary of the Colorado Medical Society when she participated in the creation of the Clinical Society.

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[7] J Marion Read and Mary E Mathes, *History of the San Francisco Medical Society*, Vol I, 1850-1900 (San Francisco· The San Francisco Medical Society, 1958)

[8] See the *History of the Medical Society of the District of Columbia, 1817-1909* (Washington, D.C The Society, 1909) For more information on women and the larger associations see Martin Kaufman, "The admission of women to nineteenth–century American medical societies," *Bull Hist Med*, 1976, *50* 251-260; Catharine MacFarlane, "Women physicians and the medical societies," *Trans. Coll Phy Phila*, 1958, *26* 80-83; and Phoebe Peck, "Women physicians and their state medical societies," *J Am Med Wom Assoc*, 1965, *20* 351-353

Women had gained entry into the general societies, and at least some were active participants. But overall few of the female doctors joined the wider associations. Of the eighteen regular female physicians in Buffalo during 1892, only four held membership in the Medical Society of the County of Erie and only two in the State Society. There were only three women, one of whom was from Cincinnati, among the 550 members of the Ohio State Medical Society in 1891. However, in that year Cincinnati had only six allopathic women physicians in practice. The participation of women physicians in general medical societies was even more limited in Detroit. Only six Detroit women were members of the Michigan State Medical Society in 1893, although the city had six times that number of women eligible for membership.

In 1900 the editor of the *Colorado Medical Journal* censured the women in his region for their lack of participation in society activities. He reported that a mere fourteen women belonged to the Colorado State Medical Society and fewer still, only ten, to the Denver and Arapahoe Medical Society. He continued:

> They may urge in their defense that they have their own women's medical society, the Denver Clinical Society, and do their duty in that. Let us see. In the first place, that society is properly classed with the special and restricted societies, membership in which should supplement and not supplant that in the general societies. . . . Again, its membership is but twenty-five, with an average attendance of six or eight, and during the past year they have read nine papers. Truly they are doing nobly by their profession.[9]

The women physicians in Buffalo and Denver were neither more nor less involved in the general societies than were women in the other cities. Nor were they necessarily less active than were their male colleagues. In 1891 only six percent of the allopathic male doctors in Cincinnati held

[9] "The women physicians of the West," *Col Med J*, 1900, *6* 302 The Denver Clinical Society protested and withdrew its reports from the Journal. The editor responded: "The real spirit and purpose of the editorial seem to have escaped the members of the Clinical Society. They should remember that bitter tonics often are beneficial " *Col. Med J*, 1900, *6*· 409

membership in the state association. Similarly, although seventy-five percent of the Buffalo medical men were members of the county society in 1892, only three percent belonged to the state organization. Thus, while the general medical associations did not include all of the female medical force, neither did they incorporate the male profession in its entirety.

Women formed their own groups in communities where medical societies abounded, societies which accepted female members. It might have been their involvement in the larger societies which prompted these women to organize independently. They saw their male associates in the general organizations generate countless societies for distinct categories of physicians and for limited purposes. In San Francisco, for example, a Society of German Physicians and a Medical Benevolent Society sprang up alongside specialty groups for gynecologists, bacteriologists, and eye, ear, nose and throat surgeons. This would again suggest that the drive to develop professional organizations in the late nineteenth century played a crucial role in the evolution of women's medical societies.

Women doctors seemingly were influenced not only by the number of medical societies developed by male physicians but also by their stated goals. Concretely, the women adopted for their organizations the types of goals which the other societies assumed.

In general, the women's medical society could take one of three forms. First, it might stress companionship among medical women. In this case, the group would function as a social club. Second, an association could serve as a means through which scientific and professional information would be exchanged. Finally, the group might decide to undertake a program of social action. The members would use their medical skills for public service.

Although a group could have pursued all three objectives simultaneously, this rarely occurred. The Cincinnati group was organized to encourage "mutual benefit and to cultivate a closer acquaintanceship among the medical women" of the city. Thirty years later the club still emphasized social activities, as this statement from a member illustrates: "We very rarely have a scientific paper, but we do have roll call response limited to three to five minutes and this is very entertaining and profitable."[10]

The Buffalo association also sought to acquaint women physicians with one another, but its program was more professional. According to a charter member, the group "was founded upon the feeling of good fellowship, kindred ambition and the desire as associates in the great workshop to join in the emulation of each other's attainments, enjoy our grand delusions, criticize each other's ideals, and compare results."[11] To further these aims—as in many of the existing male associations—the Buffalo League met to discuss cases and to hear lectures. Similarly the members of the Denver Clinical Society met to discuss reports of medical cases. An officer of the association held that these types of activities were especially needed in Denver, because of the lack of other women's medical institutions in the city. The Clinical Society would provide examples against which women could measure their reports and cases and thereby improve their work.[12]

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[10] On the organization of the club see *Clin Lan* , 1896, *36* 580. The later account appeared in *Bull Med Wom Nat Assoc* , 1926, *13* 29

The Minneapolis association apparently was more concerned with social action than were the groups in Cincinnati, Buffalo, and Denver. In 1898 it took credit for the appointment of a woman to the health board of the city as a sanitary inspector. Of more significance was the launching by the club in that year of a course of lectures on health care to be presented before mothers' clubs at missions and in settlements. Later in 1901 the same organization founded the first emergency hospital at the state fair.[13] The San Francisco organization also displayed a commitment to community issues. It set up a committee on the quality of food in the city and seems to have scheduled rather regular reports on the Children's Home and other local institutions.

If other pre-1900 groups are considered in addition to the five focal associations then it becomes obvious that such programs for social action were not common. Few of the other associations systematically engaged in community service or political action. The Iowa society was founded to bring medical women into closer contact with one another, and it usually scheduled medical papers and scientific discussions for its annual meeting. The Rochester organization had mutual helpfulness, the discussion of medical questions, and the promotion of sociability as its objectives.

In contrast to these medical societies, the general women's clubs of the era were turning increasingly to social and welfare matters. By the later nineteenth century, the number of action groups belonging to the General

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[11] Electa Whipple, "A résumé of the work of the Physician's League during its first decade," *Wom Med. J.*, 1902, *12:* 232.

[12] Josephine Peavy, "Woman's Clinical Society," *Col Med. J*, 1897, *3* 195-198.

[13] See Nellie Barsness, "History of Branch Twenty-Six (Minnesota)," *J. Am. Med. Wom. Assoc*, 1955, *10* 20-21.

Federation of Women's Clubs had increased and the number of cultural or literary societies had declined.[14] Yet, the women's medical societies did not generally show a greater concern for public service. At least three explanations can be offered for the failure of these associations to replace social interaction with political action. First, women physicians often had other channels for community involvement available to them. One of the founders of the Portland association, for example, served on numerous boards and commissions designed to improve health care, especially for women and children. A charter member of the Denver society was active in local associations concerned with the humane treatment of animals. Sometimes such activity was undertaken collectively rather than individually. The Woman's Homeopathic Medical Association of Chicago, founded in 1879, joined with other groups in 1886 to establish the Protective Agency for Women and Children, known later as Legal Aid. Moreover, the free dispensary could be regarded as a collective effort to render service. Thus, the women's medical society might have been somewhat inactive politically because there were other organizations in which women doctors could pursue political objectives.

Second, the shift to political action had only recently occurred among the general women's clubs: it did not become evident in the General Federation until the 1896 biennial meeting. Perhaps it was of too recent vintage to be reflected in the nineteenth-century medical clubs. But even the groups founded later showed no notable change in outlook. The societies formed after the turn of the century placed no more emphasis on social activism than their predecessors. This suggests a third explanation for the programmatic choices the women physicians made. They had used the predominantly male medical societies, not the general women's clubs, as their models. In the local medical associations of the nineteenth century, a program which combined discussions of cases, lectures or essays, and dinners or banquets was the usual fare. The women's medical societies were set up as institutions which would parallel the other medical groups of the period.

Conditions within the medical profession at large seem to have affected the societies of women physicians. But in addition certain circumstances relating to the activities of women physicians facilitated their organization. In particular, the women's medical societies were established in those cities where women physicians were already linked by several ties.

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[14] The information on trends in the women's club movement comes primarily from Sophonisba Breckinridge, *Women of the Twentieth Century A Study of Their Political, Social and Economic Activities* (New York: McGraw Hill, 1933); Thomas Woody, *A History of Women's Education in the United States*, Vol II (New York· Octagon Books, 1974), and Jennie C. Croly, *The History of the Woman's Club Movement in America* (New York: Henry G. Allan, 1898).

The women who set up the medical societies had often cooperated in the operation of a hospital or dispensary.[15] The founders of the Minnesota club, for example, were associated with one of the two hospitals managed by women in that city—either the Northwestern Hospital for Women and Children, which had opened in 1882, or the Maternity Hospital, founded in 1888. Those who organized the Buffalo association worked together at the Ingleside Home, an affiliate of the Woman's Hospital. The Pacific Hospital for Children, which Charlotte Brown had opened in 1875, was the primary employer for the charter members of the San Francisco club.

Except for Washington, the cities I have matched with those above appear to have had no similar institutions. In Washington women physicians operated a clinic and a dispensary in 1896 and much earlier had run two other dispensaries. One of these, the Woman's Hospital and Dispensary of 1881, had dissolved by 1896 and the second, the Woman's Dispensary founded in 1885, was by then under male control. Nevertheless, Washington—unlike Brooklyn, Los Angeles and Indianapolis—was a base for a health care agency under the auspices of medical women.[16]

The organizers of the women's groups usually were linked in another way: through having attended common educational institutions (see Table 2). Four of the six original officers for the Buffalo association had been classmates at the University of Buffalo. The first leaders of the Cincinnati organization included three recent graduates from the women's medical college in that city. The situation in Washington, Detroit, and the other paired cities was different. Most of the District doctors practising in 1896 had graduated from one of three schools: Howard University (seven); Columbian College (six); National University (five). But they had graduated over a wide period: from 1872 to 1892 for the Howard group. The Columbian cohort clustered somewhat more (1886-1894), as that school was co-educational for only a few years. Nevertheless, the overlap

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[15] I have included only those institutions operated by women physicians This excludes several of the hospitals for women run by male doctors. Omitted, too, are the institutions under the aegis of Catholic Sisters' orders and those with a single woman physician in a key post. As examples of the latter, a woman doctor supervised the Protestant Espiscopal Free Hospital for Children in Cincinnati in 1896 And in Minneapolis a female physician was in charge of a private nursing home in 1898. But these would not represent joint ventures by medical women.

[16] Detroit women organized a dispensary in 1893 and a women's medical society thirteen years later. In addition, the Denver group established a hospital in 1901.

TABLE 2
INSTITUTION GRADUATING LARGEST NUMBER OF WOMEN PHYSICIANS IN EACH CITY

City	Year	Total Women Graduates	Total, Single Institution	Institution	Total, Five Year Period[2]
Buffalo	1892	18	11	University of Buffalo	9 (1887-92)
Brooklyn	1892	15	7	Woman's Medical College of the New York Infirmary	2 (1887-92)
San Francisco	1893	35	10	(1) Cooper Medical College	5 (1888-93)
			10	(2) University of California Medical Department	3 (1888-93)
Detroit	1893	23[1]	12	University of Michigan	5 (1888-93)
Denver	1895	20	6	Northwestern University Women's Medical School	3 (1890-95)
Los Angeles	1895	20	4	Women's Medical College of Pennsylvania	3 (1890-95)
Cincinnati	1896	24	14	Laura Memorial College	12 (1891-96)
Washington	1896	25	7	(1) Howard University	1 (1891-96)
				(2) Columbian University	4 (1891-96)
Minneapolis	1898	17	3	Northwestern University Women's Medical School	3 (1893-98)
Indianapolis	1898	18	4	(1) Medical College of Indiana	3 (1893-98)
			4	(2) Central College of Physicians and Surgeons	2 (1893-98)

[1] No institution given for two of the women listed as regulars.

[2] This column indicates the number of graduates from the institution during the five-year period leading up to the time the relevant club was formed Thus, nine of the eighteen graduates from the University of Buffalo who were residing in that city during 1892 had received diplomas between 1887 and 1892. The column shows the overlap among graduates

in educational experience among women physicians in Cincinnati (Laura Memorial College) and Buffalo was not typical in Washington.

Graduates from the University of Michigan predominated in Detroit, but as in the District of Columbia they spanned a twenty-year interval. No specific educational links united most of the Los Angeles women. Except for Minneapolis and Denver, in the cities where women's societies developed, many of the female physicians had known one another since medical school days.

Another factor governing whether separate women's medical societies developed was the existence of alternatives in a number of communities. These would include the medical school alumnae associations, the societies attached to hospitals for women, and female-dominated general medical societies.

Among the post-graduate organizations, the Alumnae Association of the Women's Medical College of the New York Infirmary for Women and Children deserves mention. This association, established in 1873, had functions which paralleled those of a medical society. In fact, when the College closed in 1899, the alumnae group was transformed into the

Women's Medical Association of New York City. Graduates of the Northwestern University Women's Medical School (which was known earlier as the Woman's Medical College of Chicago) could belong to their alumnae association, reorganized in 1882. Finally, the Alumnae Association of the Woman's Medical College of Pennsylvania served to forge and maintain links among the women who had attended that institution. Throughout the late nineteenth century this association, established in 1875, was highly active.

In a few instances, women physicians gained control of what had been male associations. One of these, the Philadelphia Clinical Society, evolved from the Northern Medical Association. The Northern society had begun in 1846 as an all-male group. It admitted women during the 1880s and by 1887-88 had become "an unusual coalition of medical women and liberal medical men." The conservatives in the group withdrew to reorganize the Northern Association and left the changed association, renamed the Clinical Society in 1884, primarily to women. Apparently, the Clinical club had dissolved by 1890, for in that year Philadelphia women started the Alumnae Medical Association. The by-laws of this group required that each member take an active part in the presentation and discussion of papers.[17]

The situation in Adams County, Illinois was not nearly so complex, but just as in Philadelphia women were able to govern for a while an association started by males. A member of the Adams County Medical Society reported in 1895 that although there were too few women to justify a separate society, female doctors held all of the principal offices in the County association.[18]

In Baltimore, students, faculty and other local physicians organized the Medical Society of the Women's Medical College in 1885. One account describes the officers as "ladies who had already graduated or were still students at the college."[19] But the membership of the organization was not exclusively female.

The existence of an association composed primarily or exclusively of medical women did not invariably rule out a separate women's medical society. The Chicago situation underscores this point. Members of the Northwestern Alumnae Association joined with women from the Women's Homeopathic Medical Association to establish the Medical Women's Club of Chicago in 1894. Although the homeopathic group appears to have then dissolved, the alumnae association continued. Thus, near the turn of the century, a women's medical society, an alumnae association, and miscellaneous service agencies staffed by women physicians all operated in Chicago. Likewise, the staff of the Woman's Hospital in Philadelphia organized a medical society in 1904 even though the alumnae association still functioned. Persons affiliated with the medical school there founded the Anna Broomall Society about the same time to honor a teacher who had established an outpatient maternity department.[20]

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[17] I am indebted to Dr. Steven Peitzman for the information on the Clinical Society. A short publication by Marshall lists some of the papers presented before that group and mentions the formation of the Alumnae Association. See Clara Marshall, *The Woman's Medical College of Pennsylvania An Historical Outline* (Philadelphia: P. Blakiston, 1897).

[18] *Wom Med J.*, 1895, *4* 172

[19] Harold Abrahams, *The Extinct Medical Schools of Baltimore, Maryland* (Baltimore: Historical Society, 1969), p 71

Not infrequently, the women who belonged to the separate medical societies also held membership in the ever widening array of alumnae associations, medical sororities and associations for the promotion of women's medical education.[21] This lends further support to the argument that as a rule a society of medical women did not evolve in an organizational vacuum.

The expansion during the late nineteenth century of physicians' associations and the presence of strong ties among women doctors probably both jointly influenced the development of women's medical societies. The founders of these groups often attributed their decision to organize to the discomfort they felt in the mainstream associations. According to a charter member of the Rochester group:

> We are members of a learned profession of which the opposite sex are as sands of the sea compared with us in number . . . The medical societies are under their control; we have been admitted to these after the persistent knocking of the pioneer women of the profession, but we are not at home there as in our own circles. We need the general societies to broaden our minds and give us lines of

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[20] I found very little information on the Anna Broomall Club. An item in the *Bulletin of the Medical Women's National Association* in 1927 (*17:* 30) indicates that the group had held its twenty-seventh annual meeting that year. A later obituary for Broomall gives more detail: "[the] Anna E Broomall Medical Club was started as a slight evidence of the respect, reverence and affection for their teacher and friend by her students . . She insisted it be useful educationally, and for years medical papers were read" (*Med. Wom. J*, 1931, *38.* 184-185).

[21] In 1874 Mary Putnam Jacobi founded the Association for the Medical Education of Women The group voted in 1900 to terminate and to turn its funds over to the Hospital Association, which by then had become an affiliate of the Women's Medical Association of New York City See minutes of the Women's Medical Association for February 18, 1903, March 31, 1903, and March 21, 1906 on file at the New York Academy of Medicine.

thought but our work and growth should be free where we are without embarrassment or restraint.[22]

It seems unlikely that in Los Angeles, Detroit, and Indianapolis, the male associations were more cordial to women than were the societies in Denver, San Francisco and Minneapolis. Given this, why did the separate women's groups develop in the latter but not the former cities? The level of physician activity might have been the key. Where the medical men somewhat routinely started new associations, medical women, when disenchanted with the larger groups, perceived an alternative. The fact that other bonds connected them made the decision to organize even easier for these women. In contrast, the separate society would have been a curiosity in those communities where physicians rarely set up new professional organizations and would have been difficult where women physicians were not interconnected.

The women's medical societies commonly evolved out of existing associations of female doctors. The pattern is even clearer for some of the groups omitted from the analysis. The year before they began the Practitioner's Society, the Rochester women had organized the Provident Dispensary. The board of the dispensary and the membership of the medical society differed in only one way: the former included non-medical women. But only the physicians associated with the dispensary belonged to the society. To what extent, then, was this a "new" organization?

The predominantly male associations often had a similar history. Generally, the medical societies emerged out of extant scientific organizations. These later groups usually accepted a more limited membership and were more specialized than were their predecessors. What this suggests is that for both men and women physicians, their medical societies often have been variations on existing models.

After the turn of the century women's medical societies developed in several other cities, including Detroit (Blackwell Medical Society, 1906), Washington (Women's Medical Society of the District of Columbia, 1909), Indianapolis (Women Physicians' Club, 1915), and Los Angeles (Medical Women's Clinical Club, 1919). By that time the rise of such groups was not so obviously connected with conditions in local communities. Instead, the development of national networks among women physicians became more significant. The *Woman's Medical Journal,* founded in 1893 and well established by the end of the century, served as an important medium for reporting on medical women's groups and encouraging their activities. In addition, some group members who moved to new locations carried a zeal for organizing associations with them. Consequently, more and more groups were organized in areas which had relatively few societies of medical men and no existing alliances among medical women. This suggests that purely local circumstances may be most significant when a new type of organization first appears. Once the mode has been tested and proven, it may be adopted in communities far different from those in which it originally developed.

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[22] Mary Stark, quoted in Florence Cooksley, "History of medicine in Monroe County," *N Y St. J Med*, 1937, *37*: 88.

MEDICAL USE OF A SIXTEENTH-CENTURY HERBAL: GERVASE MARKHAM AND THE BANCKES HERBAL

MICHAEL R. BEST

A sixteenth century hypochondriac would have had a wide range of medical books to read in his leisure hours. Medical works of the period run the gamut from the most simplified magic and astrology to the ponderously learned, the practical and the truly original. The problem for the modern reader is that the range of belief in any one of these works, even for the relatively small proportion of society able to read, would have been at least as wide as the range demonstrated by the works themselves. Indeed, an Elizabethan reader may well have responded at varying levels to different passages in a single work, from complete acceptance and the actual use of any remedies suggested, to an interested but sceptical reading.[1]

Some insight into these levels of response can be gained by understanding the way in which a specific reader of known social background reacted to a given text. A study of the medical writings of a prolific, minor writer, Gervase Markham (1568?-1637), shows us in remarkable detail the attitude he had to the material in one herbal which can be identified as a direct or indirect source of some of the remedies he records. The first herbal to be printed in England was published in 1525: *Here begynneth a new mater, the which sheweth and treateth of ye vertues and proprytes of herbes, the whiche is called an Herball,* often known as the Banckes (or Bankes) herbal from the printer who first published it. It was the most popular herbal of the period, and was reprinted at least twenty times in various forms.[2] It is a typically medieval compilation from largely unknown sources,[3] with little attempt to identify the plants precisely, and a strong emphasis on the supposed medicinal properties of the herbs.

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[1] See Madelaine Doran, "On Elizabethan Credulity," *J. Hist Ideas,* 1940, *1* 513-32, and the introduction to *The Book of Secrets of Albertus Magnus,* ed Michael R Best and Frank H. Brightman, (Oxford. Clarendon Press, 1973).

[2] See, for an account of the complicated bibliographical history of the printed versions of the herbal, *An Herball (1525),* ed. Sanford V. Larkey and Thomas Pyles (New York. Scholars' Facsimiles and Reprints, 1941).

[3] See the introduction to Larkey and Pyles, Agnes Arber, *Herbals, their Origin and Evolution* (Cambridge: Cambridge University Press, 1938), p 41, and Eleanor Rohde, *The Old English Herbals* (London: Longmans, 1922), p 55f

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The popularity of the Banckes herbal is particularly interesting because the advance in botanical knowledge was so striking in the sixteenth century. At a first glance it seems that the pioneering work of William Turner in particular might have been responsible for the fact that no further editions of the Banckes herbal appeared after 1560 (Turner's herbals appeared from 1551-1568), and that a more enlightened reading public rejected the vagueness and near-superstition of the earlier herbals. It is the object of this paper, however, to record evidence which suggests that as late as the early seventeenth century the Banckes herbal was treated as a practical work of instruction by at least one eminent Elizabethan family, the Markhams, despite its (to our eyes) obviously bookish origin and semi-literate presentation.

The social and educational background of the Markhams, and of Gervase in particular, can be judged with some confidence, since the family history is well documented.[4] Gervase's father, Robert, was an aristocrat of only moderate means, but he was able to give his younger sons a good start in life. Gervase was the third son; we know few details of his life, but his elder brother, Francis, the second son, left an autobiography which tells us that he was educated at the distinguished schools of Winchester and St. Paul's, and later attended Cambridge. We may assume that his younger brother would have had a similar education, for his writings, if not always original, are certainly the product of a literate and well-informed mind. It is also likely that Gervase spent several years pursuing a military career, where he was able to develop a reputation for skill in the management and care of horses. In his earlier years of manhood he tried his hand at almost all the major literary forms then fashionable—narrative, satirical, and religious poetry; drama; and romantic narrative prose. None of these writings can be called distinguished; it was not until he began to write practical handbooks of instruction, first on horses, later on farming, aristocratic sports, letter-writing, military matters and housewifery, that he produced works of interest and originality. Gervase was the product of a good aristocratic Elizabethan education, in which the medieval tradition of acceptance of the authority of the written word was still strong,[5] but he was also a man of very practical interests and might be expected to adopt a pragmatic attitude towards information to be included in books concerned with his special skills.

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[4] The *Markham Memorials* were published in 1913 by Sir Clements Robert Markham, the account which follows is indebted—as all work on Gervase Markham must be—to the research of F. N L. Poynter, *A Bibliography of Gervase Markham, 1568?-1637* (Oxford Oxford Bibliographical Society Publications, 1962)

[5] A useful summary of educational attitudes prevailing in Markham's day can be found in Kenneth Charlton, *Education in Renaissance England* (London and Toronto: Routledge and Kegan Paul, 1965)

More than fifty years after the last recorded edition of the Banckes herbal, Gervase Markham's *Countrey Contentments* (1615) appeared. The second part of this work was *The English Hus-wife,* a work of instruction with chapters on "Physicke, Cookery, Banqueting-stuffe, Distillation, Perfumes, Wooll, Hemp, Flax, Dayries, Brewing, Baking, *and all other things belonging to an Household.*"[6] It is the section on household medicine which concerns us; in the edition of *The English Hus-wife* which appeared in 1631 as part of his larger collection *A Way to get Wealth,* Markham says that the remedies he records were "gathered together, by two excellent and famous Phisitions (Dr. Burket and Dr. Bomelius [marginal note]), and in a Manuscript given to great worthy Countesse of this Land" (p. 5). Both Bomelius and Burcot were popular physicians who lived in the mid sixteenth century, but who are not known to have left any writings; the Countess cannot with any certainty be identified. What is certain is that the medical and culinary recipes read very much as though they came originally from some manuscript compilation of the kind frequently preserved in the papers of noble families,[7] though Markham has edited and organized them to some extent.[8]

One unacknowledged source of the medical remedies Markham quotes is the Banckes herbal. He may not have known that parts of his manuscript derived from it, for the last recorded edition appeared eight years before his birth. However, whether he was working from the Banckes herbal or a manuscript derived from it, it is possible to pinpoint with some accuracy the edition from which Markham's borrowings were made.[9]

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[6] *The English Hus-wife* (1615 edition), title page. All quotations are from this edition, hereafter abbreviated *Hus-wife*

[7] Examples are the *Arcana Fairfaxiana Manuscripta*, ed. George Weddel (Newcastle-on-Tyne, 1890), and *The Court and Kitchin of Elizabeth, commonly called Joan Cromwel, the Wife of the late Usurper* (London, 1664) See also *The Diary of Lady Margaret Hoby, 1599-1605*, ed. Dorothy M. Meads [Gladish] (Boston and New York Routledge, 1930). For discussion of books which combined cookery and other household hints with medical recipes see John B Blake, "The Compleat Housewife," *Bull Hist Med.*, 1975, *49* 30-42.

[8] The second edition of *The English Hus-wife* (1623) and all others following it have a substantially augmented, and far better organized chapter on medicine, it is not clear whether the sources acknowledged here refer to the additions or to the original material of the 1615 edition

[9] The probability is that the recipes originated in a late edition of the Banckes herbal The versions ascribed to "Macer" omit a number of herbs Markham used, notably the herb "asterion," Markham's use of which is discussed below. The editions ascribed to Antony Askham contain the same material Markham used, but in a different order; since one piece of cumulative evidence in favour of the Banckes

Some recipes are taken from the herbal with little change, though Markham (or the compiler of his manuscript) has used some editorial freedom, mainly in modernizing the language and improving the style, as the following passages, the first from Banckes, the second from *The English Hus-wife*, will show:

> . . . [wild neppe or wodbynde] is good for sinowes that be shronken or cut . . . Go to ye rot of wylde Neppe, that is lyke wodbynd and make a hole in the myddes of the rote thā couer it well agayne that no ayer go out nor that no rayne go in nor water, powder nor the sonne come not to muche to it, let it stāde so a night and a day, thā after that go to it, and thou shalt fynd therein a certain lycour take out that licoure with a spone and put it into a clene glas and do so every daye as longe as thou findest ought in the hole and this must be done in the moneth of Aprill or Maye, than anoynte the sore therewith against the fyre, than wete a lynen cloth in the same licoure and lappe it about the sore and it shal be hole in a short space, on warantyse by the grace of God.[10]

> *For sinewes cut or shrunke*
> If a mans sinnewes be cut or shrunke, he shall goe to the root of the wild neepe which is like woodbine, and make a hole in the midst of the roote; then couer it well againe that no Aire goe out or in, nor raine or other moisture: thus let it abide a day and a night; then goe and open it and you shall find therein a certaine liquor: then take out the liquor and put it into a cleane glasse, and doe thus euerie day whilst you find any moisture in the hole; And this must onely be done in the moneths of *Aprill* and *May*. Then annoint the sore therewith against the fire: then wet a linnen cloth in the same liquor, and lap it about the sore and the vertue will soon be perceiued. (p. 35)

Even more convincing than such verbal parallels in establishing the Banckes herbal as Markham's ultimate source for some of his recipes is the way in which it clarifies some obscurities in Markham's text. Two examples will illustrate this. In the recipe "for the dropsy" (*Hus-wife*, p. 14),

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herbal as a source for the "compiled" recipes discussed below is that the herbs are always mentioned in the order they appear in it, the same argument must eliminate Askham's version The Banckes herbal included, from a separate manuscript tradition (see, for example, W R. Dawson, *A Leechbook, or Collections of Medieval Recipes of the Fifteenth Century* [London: Royal Society of Literature of the United Kingdom, 1934], p. 301, nos 979-986) some advice on "The vertues of waters stylled " Since the same advice appears in later editions of *The English Hus-wife* (1623 ed , p 135) in the same form as it does in Banckes, the likelihood is that Markham's source was one of these later editions (the first to appear with the addition was c. 1552, see nos. 4726-29 in Pollard and Redgrave's *Short Title Catalogue*) The copy used may have been imperfect, since no use was made of recipes on a total of nine leaves of the book (sigs D2-3, E2-3, F1-2, G2-4)

[10] Transcribed from the edition of c 1560 in the British Museum (1405 a.24), *A boke of the proprefies of Herbes called an herball,* see sigs. I8-8^v. This edition is used for all quotations, as it may have been the one used by Markham (see note 9 above). Page references following quotations refer to the reprint of the 1525 edition ed. Larkey and Pyles (see p. 81)

the original calls for the puzzling herb "darke Wallwoort," but reference to the Banckes herbal makes it clear that two separate herbs are intended: dauke—"*daucus asinias*" in Banckes (sig. C3^v; p. 25), now known as *Daucus carota*, the wild carrot—and wallwort, both of which are credited with power to "hele ye Dropsy." Another obscurity occurs in the description by Markham of the powers of the distilled water of betony which is said to be good for the "heary ago" (*Hus-wife*, 1623 ed., p. 135). Later editions emended this to "old age," but the version in the Banckes herbal has the obviously correct "hearynge" (sig. K3).

Markham's confidence in the medical efficacy of advice given by the herbal is most interestingly shown in a large number of recipes (over forty in all) which were compiled from entries concerning different herbs, often widely separated throughout the herbal. Many herbals included an index of diseases,[11] so that it was possible for a person who had "the grief of the stone," for example, to see quickly the various herbs which were recommended to give him ease. No surviving edition of the Banckes herbal has such an index,[12] so it would appear that one industrious owner of a late edition systematically compiled one for himself (herself if it was Markham's countess), and from this index derived a large number of composite remedies. The process will be made clearer by an example. Markham gives a recipe "*To prouoke sleepe*" (*Hus-wife*, p. 10):

Markham (1615)	Banckes (c. 1560)
But if one of the family be troubled with two much watchfulnesse, so that they cannot by any meanes take rest, then to prouoke the party to sleepe,	
you shall take of saffron a dramme dried, and beaten to powder,	Crocus. This herbe is called Saffron, the vertue of this herbe is thus, it . . . wyll make a mā to slepe . . . (sig. B8^v; p. 20)
and as much lettice seed also dried, and beaten to powder,	Yf a man may not slepe take the sede of this herbe [Lactuca . . . Lettyse or slopewort] and stampe it to powder and tēper it with womans mylke and make a playster

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[11] *The Grete Herball* (1526), for example, and even the far more scholarly work of Rembert Dodoens as translated by Henry Lyte in *A Niewe Herball* (1578) and expanded by Gerarde in *The Herball, or Generall Historie of Plantes* (1597) have exhaustive indexes of this kind, indeed one odd work, *Ram's little Dodeon. A briefe epitome of the new Herbal* (1606), seems to have been compiled from the index to Lyte's translation.

[12] All editions recorded in the *STC* are available in the University Microfilm Series, including those variants ascribed to Ascham, Carey and "Macer."

	thereof on lynte and lay it to ye temples of thy heade. (sig. E1; p. 42)
and twice as much white poppyseed beaten also to powder, and mixe these with womans milke till it be a thick salue, and then binde it to the temples of the head,	The whyte popye is colde and moyste and it is good to cause one to slepe . . . For to prouoke a slepe, make ye a plaister of . . . [it] with womans milke and the whyte of an egge and lay it to the temples. (sig. G6^v; p. 63)
and it will soone cause the party to sleepe; and let it lie on not above foure houres	

(The concoction would be expected to work through a kind of sympathetic magic: woman's milk and the herbs recommended are "colde and moyste" in terms of the doctrine of the four elements and the corresponding humours, and thus the plaster would induce a similar cold and moist, or phlegmatic and sleepy state in the patient.)

Verbal parallels, as well as the similarity of properties claimed for the herbs, show that the passages are closely related. In fact the Banckes herbal, with its specific references to the making of a plaster, provides clarification of Markham's recipe, where it is not clear how a salve can be "bound" to the temples of the head. Further evidence that the herbal is the source lies in the fact that the herbs are mentioned in the order that they appear in the original; the Banckes herbal is arranged rather approximately in alphabetical order of the names (sometimes English, more often Latin) of the herbs, and in the many recipes compiled in the same way as the example quoted the herbs are always listed in order of their appearance in the herbal, however much the compiler condensed or modified the original text. The obvious inference is that the compiler was working from an index, or read carefully and systematically through the book while working on each ailment.

Once the Banckes herbal is established as the source from which these recipes were compiled, the differences from the original become most interesting. Markham's version adds specific quantities, designed perhaps to make the recipe more usable, and which are possibly the result of actual experience. Even more indicative of experience is the caution that the salve should not be left on too long. Another possible example of modification through experience is found in the herbal's mention of the genuinely and strongly emetic effect of the herb stonecrop (*Sedum acre*): "the vertu of this herb is thus it wyl make a man to cast" (sig. B6). Markham's recipe (*Hus-wife*, p. 13), "If you would compell one to vomit, take halfe a spoonful of Sto[n]ecrop and mix it with three spoonfull of white wine, and give it in the party to drinke, and it will make him vomit presently," is followed by the sensible and accurate caution, "but doe this seldome and to strong bodies, for otherwise it is dangerous." The experience which led to this comment can hardly have been pleasant.[13]

One of Gervase Markham's great enthusiasms was horses, and he wrote a large number of books about them. He was, in fact, rather more interested in the diseases of horses than of humans, and it is appropriate that another source of the medical section of *The English Hus-wife* is Markham's own horse-remedies.[14] On several occasions we have the fascinating opportunity of seeing a recipe taken from the Banckes herbal, and recommended initially by Markham for curing a disease in horses, later modified, apparently as a result of experience, then finally recorded as a remedy for humans. It is evidence of a most convincing kind that the herbal was taken seriously as a handbook of practical medicine.

The herb *bursa pastoris,* which "is called sheperdes purs," is credited with the following healing powers in the Banckes herbal: "drynke it wyth reed wyne, or with mylke and it will stanch ye blody menson" (sigs. B4^{v}-5; p. 16). The "menison" or "flux" is diarrhoea, and shepherd's-purse is still a common name for *Capsella bursa-pastoris.* One of Markham's most popular works on horses, *Cavelarice* (1607) includes, in the section on diseases and their remedies, two recipes recommended to cure weakness in a horse's bowels, the second of which is derived from the herbal:

> There belongs to a horses guts many diseases, as . . . feeblenes or loosnes, which may be cured by giving him beane-flower and Tanners bark, boiled in a quart of milke, or the bloody flixe, which you may cure by giving him about a pinte of Redd Wine boiled with the Hearbe called Sheapheardes Pursse . . . (Bk. 7, p. 74)

The first remedy is probably sounder medically, with its combination of tannin and easily digestible foods. Three years later, in *Markhams Maister-peece* (1610) these two recipes have been combined in a way typical of Markham's editorial method, and indeed reminiscent of the way remedies were compiled from the Banckes herbal:

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[13] Markham may have incorporated this advice from a written source: William Langham's *Garden of Health* ("1579", i e. 1597) has a similar warning (p. 673), though there is no evidence that Markham used it as a source. In any case someone must have experienced the danger

[14] "For sore eyes" (*Hus-wife*, p. 32) is found in *Cavelarice* (1607), bk. 7, p 37 and *Markhams Maister-peece* (1610), p 233, "For any old sore" (*Hus-wife*, p. 34) is found in *Maister-peece*, p. 451, and *Markhams Methode or Epitome* (1616), p. 16; "To eat away dead flesh" (*Hus-wife*, p. 33) is found in *Cheape and Good Husbandry* (1614), p. 38 and originates in the Banckes herbal (sigs A6-6^{v}, p. 8), and so on.

> Now for mine owne part, I have euer used for the bloudy fluxe but this medicine only. Take of red wine 3 pints, half a handful of the hearbe called *Bursa Pastoris*, or shepheards purse, and as much Tanners barke taken out of the fat [vat] and dryed; boyle them in the wine till somewhat more than a pint be consumed, and then straining it very hard give it the horse luke warme to drink: if you do add unto it a little cinamon, it is not amisse. (p. 150)

Finally, in *The English Hus-wife* the recipe has become even more specific, and the cinnamon suggested in passing in *Markhams Maister-peece* is integrated with the rest of the recipe:

> For the bloody-flux, take a quart of Red wine and boyle therein a handfull of Shepheards-purse till the hearb bee very soft: then straine it, and ad thereto a quarter of an ounce of *Cynamon*, and as much of dryed Tanners barke taken from the ouze, and both beaten to fine pouder, then give the party halfe a pinte thereof to drinke morning and evening, it being made very warme, and it will cure him. (*Hus-wife*, p. 15)

Other variations of the recipe occur elsewhere,[15] but these examples provide an illuminating illustration of the evolution of a remedy, presumably conditioned by trial and error. By a process of accretion the recipe becomes an admirable example of "shotgun medicine:" put enough things in, and something is likely to do some good. At least two other recipes in *The English Hus-wife* evolved from the Banckes herbal via Markham's remedies for horses: "For dimme eyes" (*Hus-wife*, p. 32), comes from Banckes on "Absynthium" or "wormewode" (sig. A4; p. 5) and is found in *Cheape and Good Husbandry* (1614), p. 25; and a treatment for bruises using the herb "brockell hempe" (brooklime or speedwell, *Veronica beccabunga*) is found in Banckes (sig. C4^v, p. 30), and also in *Cheape and Good Husbandry*, p. 56.

Someone in the Markham family took the Banckes herbal seriously enough to index the references to diseases, compile recipes from it, and try them out on man and beast, modifying the recipe as a result. There are signs, however, that the more magical cures were viewed with some scepticism. One paragraph in *The English Hus-wife* is concerned with the

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[15] There is a second recipe, "To staunch blood" in *The English Hus-wife* pp 51-2 Thomas Lupton, in *A Thousand Notable Things of Sundry Sortes* (1579) has a passage which may be related "Beware that nothing bynde they body harder, when thou bleedes, and then holde thy handfull of shepheards Purse, and steadfastlie looke up to the Sunne, and the bleeding will cease This is proued" (bk 3, no 98). Langham in *The Garden of Health* also counsels that the juice of *bursa pastoris* be drunk "with Red wine warme three dayes· prooued" (pp 107-8)

"falling sickness" (epilepsy). It begins with the realistic statement that the falling sickness is "seldome or never to be cured," then continues with a recipe from the herbal which is derived from astrological sympathetic magic (epilepsy, like lunacy, was associated with the power of the moon): "if the party which is troubled with [the falling sickness], will but morning and evening, during the wane of the moone, or when she is in the signe *Virgo,* eate the berries of the hearbe Asterion, or beare the hearbe about him next to his bare skinne; it is likely he shall find much ease and fall verie seldome . . ." Markham's practical nature at this point asserts itself, and he adds, "though this medicine bee somewhat doubtfull."[16]

The fact that Markham included this recipe at all is interesting, for, in contrast with those already discussed, he obviously had not tried it out, and was sceptical of it on general rather than experimental grounds. The herb "asterion" is defined by the *OED* as "a plant of doubtful identity," and it is safe to assume that Markham did not know it personally, for in "A short table expounding all the hard words in this Booke" first published as part of *Cheape and Good Husbandry,* he explains that asterion is "an herbe growing amongst stones as [on] walles, or such like, it appeareth best by night, it hath yellow flowers like *Foxegloves,* and the leaues are round and blewish." This is a less impressive identification than it sounds, however, for it is a condensed version of the description of asterion in the Banckes herbal: for example, the odd phrase "it appeareth best by night" is Markham's interpretation of the herbal's "this herb sheweth by nyght," more probably to be explained as a flower that opens in the evening. The appearance in the "table of hard words" of several herbs described in the words of the Banckes herbal is fairly conclusive evidence that Markham himself (rather than his "Countesse") possessed the book, and increases further the likelihood of his having been the person who compiled the recipes.

Although Markham was sceptical of the practical applicability of an astrological recipe, he did include it in his book, and he included a description of a herb he had obviously never himself identified in English terms.[17] It seems that he was not prepared to dismiss entirely the possibility that this kind of medicine could work in so mysterious a disease as epilepsy. There is no doubt, then, that Markham passed on remedies in which he had little confidence, presumably because he was not prepared to reject them outright. He trusted the Banckes herbal: when he was not able to identify a plant, he transmitted to the reader the herbal's description, no doubt in the hope that others would recognize it; when the remedy seemed to him to verge on the improbable he included it, with a sceptical comment; and above all, he seems to have employed at least some of the herbal's recipes, at least on horses, and he was prepared to recommend many more for human use.

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[16] Compare Banckes, sigs. A6ᵛ-7, p 8.

[17] One common problem in all the medieval herbals is that of identification. Writers in northern Europe were quoting corrupted versions of recipes first recorded by such writers as Dioscorides and Pliny, who were familiar with southern European plants. It was Turner, again, who first made a systematic attempt to identify English plants in relation to the Latin terminology. See the reprint of his *Libellus de re herbaria* (1538) and *The Names of Herbes* (1548) edited by James Britten and others for the Ray Society (London, 1965).

Markham read even this one work with different levels of response, from scepticism to complete acceptance. It may be that he rejected some of its remedies outright, for by no means all of them were used in *The English Hus-wife*. Nevertheless, fifty years after its last edition, and almost a hundred years after it first appeared, the herbal was being used as a handbook of medicine. Despite radical changes in medical and botanical attitudes, almost two hundred years after the first appearance of the Banckes herbal a hypochondriac at the end of the seventeenth century could still have been indirectly savouring the remedies it records, for Markham's book continued to be published until 1695.

EXTENSIVE TREPANATION OF THE SKULL IN ANCIENT LATVIA

V. J. DERUMS

Trepanation of the skull was already being carried out in several countries during the Neolithic period. According to the investigations of a number of paleopathologists, [Muñiz and McGee (1897); Ruffer (1918); MacCurdy (1923); Pirpilašvili (1954); Boev (1959); Regöly-Mérei (1962); Ullrich and Weickmann (1963); Hajniš (1964); Rochlin (1965); Derums (1964, 1965, 1966, 1969, 1970)] the results of these operations were comparatively effective.[1] MacCurdy presented a photo of the skull of a man about 55 years old from ancient Peru, who had five round defects of the skull as a result of successful operations.[2] In 1963 Ullrich and Weickmann presented data about the skull of a man from the Neolithic period in Germany. Two-thirds of his cerebral cranium had been trepanned. Some of the margins of the trepanned areas showed signs of repair phenomena.[3]

We have investigated 4000 human skeletons found at archeological excavations in different parts of the Baltic States. The material found dates from the Mesolithic period (8000-4000 B.C.) up to the eighteenth century A.D. The methods used for investigating the material were anatomical analysis, X-ray techniques, stereoscopic microscopy (magnification × 50), and limited use of histological methods.

We have found only ten cases of possible trepanations of the skull carried out in the period between the Bronze Age and the seventeenth century A.D. These have been described in previous publications.[4]

Recently, the skeleton of a man with a trepanned skull was found at the Zvejnieki burial ground on the shore of Lake Burtnieku during the ar-

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[1] See bibliography at end of article

[2] G G MacCurdy, "Human skeletal remains from the highlands of Peru," *Amer. J. of Phys Anthrop.*, 1923, *6* 248-249 and Plate XXI

[3] H Ullrich and F Weickmann, "Prähistorische 'Neurochirurgie' im mitteldeutschen Raum," *Zentralbl Neurochir* , 1963, *24* 103-120

[4] V. J. Derums, "O travmach kostjej i narodnom vračevaniji po materialam archeologičeskich raskopok v Pribaltike," *Izvestija Akademii Nauk Latv SSR*, (Riga, 1964), n 6, 113-120, Ibid , "O trepanacijach čerepa u drevnjich žitljej Pribaltiki," *Arkh Anat*, 1966, *50* 87-90, Ibid , "Uber die Regeneration von Knochenverletzungen bei den Bewohnern des Baltikums vergangener Jahrhunderte," *Anat Anz* , 1971, *129* 523-30

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cheological excavations of F. Zagorskis.[5] This burial ground dates from the well-known comb and pit marked pottery culture existing in the East Baltic region in the middle Neolithic period (ca. 2500 B.C.). This latest find surpasses all previous ones both in the size of the trepanned area as well as in the results of the operations. The extensive trepanation opening, running along the sagittal suture from the coronal suture up to the lamboid suture, is 120 × 60 mm. in its widest part and is made up of three defects which have merged (Fig. 1). The largest of these three defects is the central one which measures 68 × 55 mm. The front one measures 34 × 27 mm. and the back one 30 × 20 mm. (See Fig. 2 and the X-ray in Fig. 4).

The margins of the central trepanation opening are sloping and are 10 mm. wide. The operation was obviously done with a sharp flint or a stone splinter or perhaps partly by cutting with a knife. Scarification of the bone was also performed. This is indicated by the sloping edges of the defect which are smooth as if they had been ground. They are coated with a thin layer of neoplastic periost as the result of a completed osteoplastic process. On the left side the margins of the bone which have been operated on are blunter and have considerable coarse periosteal stratifications at the final stage of repair. This phenomenon leads one to believe that the surgeon possibly used another blunter instrument as well. The diploe of the large trepanation defect is closed except for the lower end of the left margin which is 18 mm. long (See b-b_1 on the sketch in Fig. 3). At this point the diploë is partly open as the result of the crumbling of the bone margin before conservation of the skull. At the upper right end of the central trepanation defect there is a triangular fissure—the result of the crumbling of the bone in the earth.

The front trepanation defect, which is 25 mm. in diameter, has blunter margins which are also sloping possibly indicating that a scraping method was used for part of the operation. Repair phenomena are clearly visible and the regeneration of the left central part of this defect. There is also a section of the bone margin (15 mm. long) where partial crumbling of the margin took place (See sketch in Fig. 3).

The lower trepanation opening is the smallest (15 × 10 mm.). It has smooth and sloping margins that are 10 mm. wide. The process of regeneration of the bony tissue has also been completed here and the diploe closed. At the lower end of the defect there is a small triangular fissure

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[5] F Zagorskis, *Neolita apbēdījumi Zvejnieku kapulaukā* (Neolithic burial in Zvejnieki cemetery) Zinātniskās atskaites sesijas materiāli par arheologu, antropologu un etnogratu 1971 Gada pētījumu rezultātiem (Riga Izd-vo Zinātne, 1972), pp 103-106

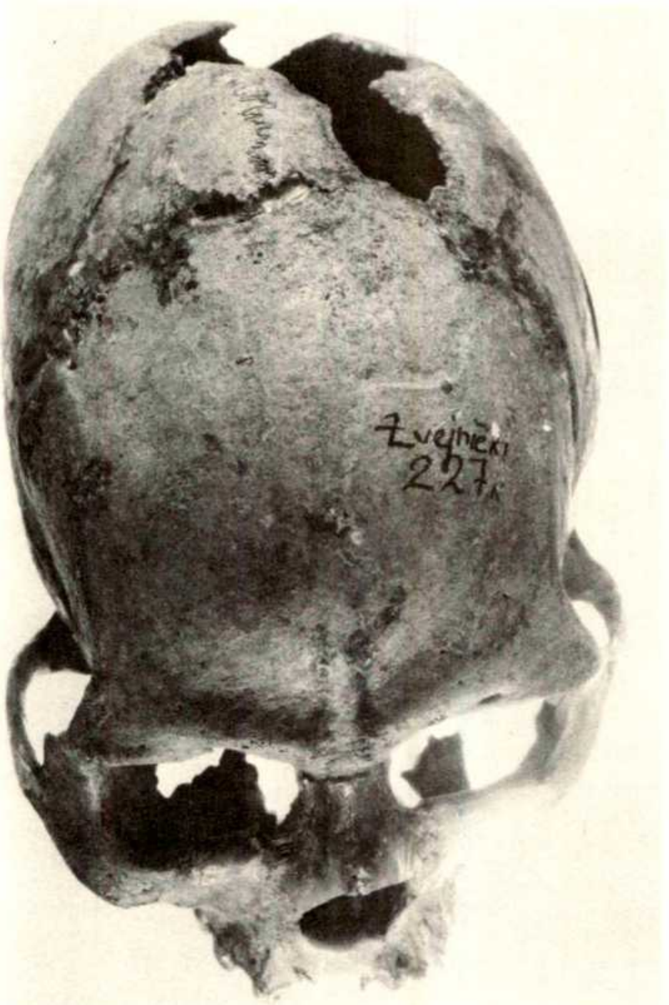

Figure 1

which is the result of the crumbling of the bone before conservation of the skull. All these three trepanation openings were made at the same time. This has been established by investigations made with a stereoscopic biological microscope (MBC-2).

The experience of paleopathologists and surgeons shows that large trepanation openings of the skull, especially in the region of the sutures were performed only in very severe cases where life was threatened. It is highly probable that in this instance the man had suffered an extensive combat

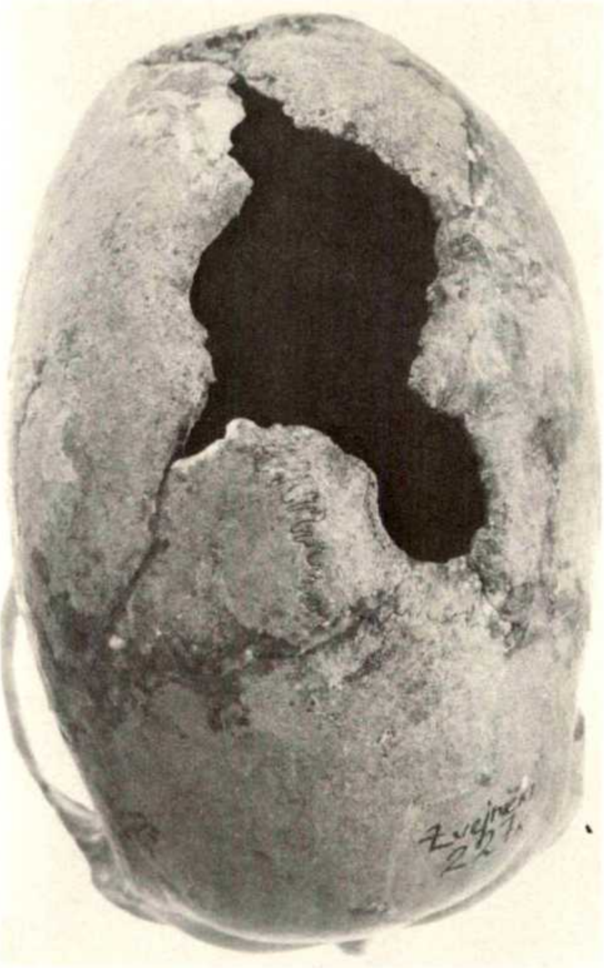

Figure 2

injury of the skull with incarcerated splinters in at least three places and possibly in more. An empirical surgeon has skillfully ablated the splinters and trimmed the margins of the fractured cranial bone.

With such an extensive vulnerary surface on the shattered cranium there was a great likelihood of severe infection. In spite of this, this trepanned inhabitant of ancient Latvia seems to have escaped such threatening complications. For judging by the completely shaped bony tissue at the margins of the trepanation defect and the closed diploë, the man survived this severe and extensive operation and lived at least a year afterwards. Death may well have been due to some other disease.

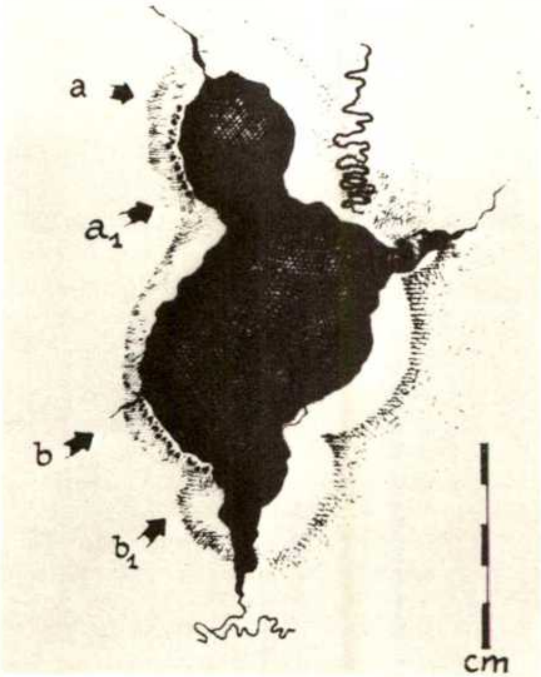

Figure 3

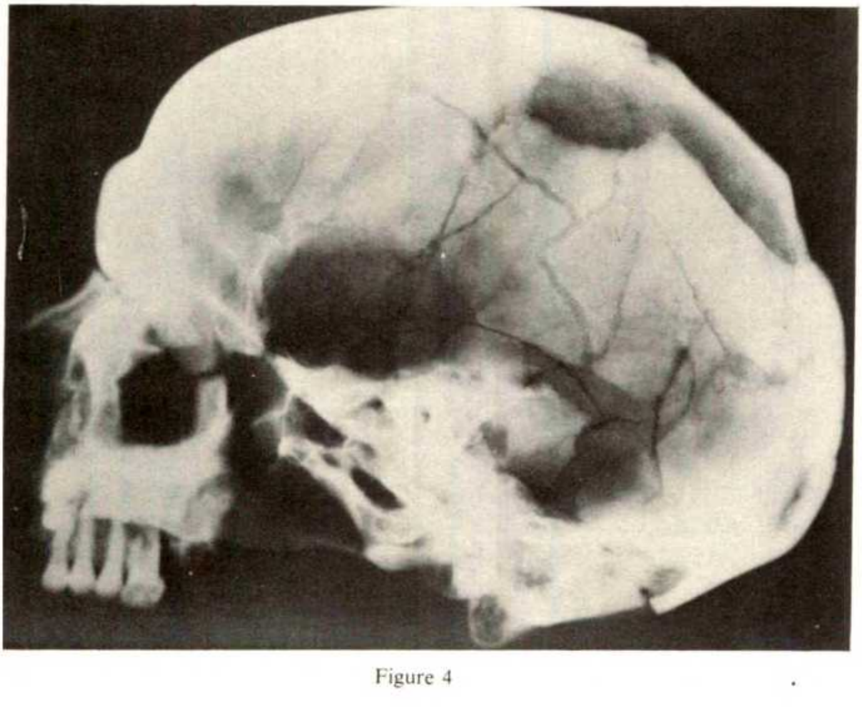

Figure 4

This favorable outcome of a severe operation again shows clearly the great immunobiological abilities of the connective tissues for repair processes in ancient men, as we have already noted in our previous work. In 1964, 1966, and 1971 we have already described cases of such healing of penetrating wounds of the cranium and traumatic injuries of other bones in inhabitants of ancient Latvia.

This case of trepanation also indicates the skill of those practicing surgery in Latvia in the Neolithic age. The outcome of this extensive trepanation testifies to the good health and great endurance of the inhabitants of ancient Latvia.

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MEDICO-HISTORICAL NEWS AND ACTIVITIES

CORRESPONDENCE AND REPORTS

JANET KOUDELKA AND FRIENDS AT A PITTSBURGH BREAKFAST

It was on the morning of Friday May 4, 1979, during the Fifty-Second annual meeting of the American Association for the History of Medicine in Pittsburgh, Pa., that a well attended breakfast in honor of Janet B. Koudelka was served in the William Penn Hotel, headquarters for the AAHM meeting. Delightful speeches are rarely made at breakfast but this was one of those rare occasions, and Ed Atwater (Dr. Edward C. Atwater of Rochester, N.Y.) did the honors with grace and wit. What is more, the encomiums he delivered were for the most part true and believable and the response they awakened among the breakfasters was one of delighted affirmation. As Genevieve Miller (at that time Dr. Miller was representing Cleveland but she is now a Baltimorean once again) could additionally testify from the height of the President's chair, Ed spoke no more than the truth, and even fell a little bit short of it, when he praised Janet Koudelka for her knowledgeable and devoted service to the Association and her unflawed good humor in the many valued tasks she did justice to in its interest, and that of the

Bulletin, over the years. This orthron was in fact the absolutely fitting office for the retirement of one so prompt, vigilant and alert, because Janet begins retirement as breakfast begins the day—not to finish something but to initiate it. The cardiologist-historian, Bruce Fye, showed that he is a wide-awake photographer when his camera caught these engaging shots of Koudelka and Temkin, the happy honorand and the (always early-rising) professor wearing matutinal grins. Koudelka herself then outdid the speech-making of both Atwater and Miller and brought an added measure of enchantment to an enchanting day. Even among the many present who seldom greet the dawn with a glad cry, and who were showing by their presence unequaled love and admiration for Janet, this was a breakfast to be remembered with pleasure and one they wouldn't have missed for a mint. Altogether a splendid occasion!

Samuel Shortt

William Coleman

APPOINTMENTS IN THE HISTORY OF MEDICINE

Queen's University, Kingston

Samuel E. D. Shortt has been appointed the Hannah Professor of the History of Medicine at Queen's University, Kingston, Canada. Dr. Shortt received his undergraduate education at McGill University and pursued graduate studies at Carleton and Queen's Universities, receiving his Ph.D. in history from the latter in 1973. He has published a book and several articles on Victorian Canada and is presently editing a collection of essays on the history of Canadian medicine. In addition, Dr. Shortt is a graduate in medicine from the University of Western Ontario and is a certificant of the College of Family Physicians of Canada. His research interest centers on medicine as an aspect of late nineteenth-century social history. He will be teaching in both the Faculty of Medicine and the Department of History.

University of Wisconsin

William Coleman has been appointed Professor of History of Science and History of Medicine at the University of Wisconsin at Madison. Dr. Coleman received his A.B. in zoology from Wabash College in Indiana. After graduate study at Indiana University and Yale University, he began graduate study in the History of Science at Harvard. After a year of further study at the University of Paris he received his Ph.D. from Harvard in 1962.

Dr. Coleman has taught at the Johns Hopkins University (1962-71, 1973-78), moving from Assistant Professor of History to Professor of History of Science and serving in 1977-78 as Instructor in History of Science at the Institute of the History of Medicine. He has also taught at Northwestern University in 1971-73 as Professor of History. He has been awarded fellowships by the American Council of Learned Societies and the National Endowment for the Humanities and has received research grants from the NIH and the NSF.

His research interests are two-fold. He continues the study of German biology in the late eighteenth and the nineteenth centuries and he also works in the general domain of French public health from the Revolution to about 1880. His monograph on the epidemiological studies and associated ideology of Louis Villermé is now near completion.

Washington University

Kenneth M. Ludmerer has been appointed Assistant Professor of Medicine in the School of Medicine and Assistant Professor of History in the Faculty of Arts and Sciences at Washington University, St. Louis. Dr. Ludmerer will initiate teaching in the history of medicine as part of the program of the Department of History as well as teaching internal medicine. Dr. Ludmerer received his A.B. from Harvard in 1968 and his M.D. in 1973 from Johns Hopkins. From 1970-71 he was a Fellow at the Institute of the History of Medicine at Johns Hopkins and received an M.A. Dr. Ludmerer is the author of *Genetics and American Society* (1972) and is presently conducting a study of the emergence of modern medical education in the United States.

University of Michigan

Martin S. Pernick has been appointed Assistant Professor in the History Department at the University of Michigan to teach the history of medicine. Professor Pernick received his B.A. from Brandeis University in 1968. He received both his M.A. (1969) and his Ph.D. (1978) from Columbia University in New York. The title of his dissertation was "A Calculus of Suffering: Pain, Anesthesia, and Utilitarian Professionalism in Nineteenth Century American Medicine." He was formerly an Instructor in social history at the Pennsylvania State University College of Medicine (Hershey) in the Department of Humanities.

University of Wisconsin

W. Bruce Fye has been appointed Adjunct Assistant Professor in the Department of the History of Medicine at the University of Wisconsin. Dr. Fye received both his M.D. and an M.A. from the Johns Hopkins University. He is Director of the Cardiographics Laboratory at the Marshfield Clinic in Wisconsin. He is currently writing a history of the professionalization of American medical education.

WILHELM MOLL (1920-1979)

The *Bulletin* has learned with regret of the death on June 16, 1979, of Dr. Wilhelm Moll. Dr. Moll was the Executive Director of the Health Sciences Library of the University of Virginia at the time of his death. He was born in Austria on June 2, 1920 and came to America in 1939. He obtained his B.A. in 1943 from Denison University and his J.D. from the University of Chicago in 1945. During his career he worked with the War Department and the U.S. High Commissioner in Germany and then with the War Documentation Project in Alexandria, Virginia. He obtained his M.S.L.S. from the Catholic University of America in 1956. He held a number of library positions beginning at Indiana University in 1956 and moving to the University of Virginia in 1962. He was closely involved with all phases of the development of the Claude Moore Health Sciences Library which opened in 1975. Dr. Moll had a very active interest in the history of medicine and was the author of many publications in the field. He was a Council member of the American Association for the History of Medicine and a contributor to all aspects of its activities. He will be greatly missed by all members of the Association.

ANNOUNCEMENTS

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE

Call for Papers—Annual Meeting, 1980

The next annual meeting of the Association will take place in Boston, May 1-3, 1980. The Program Committee invites both members and nonmembers to submit papers for the program. Those who wish to have papers considered for presentation are asked to submit an abstract of 300-350 words (5 copies) to the Chairperson of the Program Committee, Dr. John C. Burnham, Department of History, The Ohio State University, 230 West 17th Avenue, Columbus, Ohio 43210 by December 1, 1979. The Committee is considering the possibility of having a full half-day of concurrent work-in-progress sessions in which discussion and criticism would be especially encouraged. This would be open to all participants and not restricted to students.

Papers may deal with any aspect of medical history. The time allotted for presentation will be strictly limited to 20 minutes. A discussion period will be provided at the discretion of the session's presiding officer. Participants are reminded that the *Bulletin of the History of Medicine,* the official organ of the Association, reserves the right to consider for publication any paper delivered at the meeting.

Osler Medal Essay Contest, 1980

Students in schools of medicine and of osteopathy of the United States and Canada and graduates of the class of 1979 are invited to enter the William Osler Medal contest. Essays in the history of the health sciences, of a maximum length of 10,000 words, must be submitted by February 1, 1980, to the Chairman of the Osler Medal Committee of the American Association for the History of Medicine: John P. McGovern, M.D., 6969 Brompton, Houston, Texas 77025. Further information about rules and eligibility may be obtained from Dr. McGovern.

NATIONAL NEWS

Logan Clendening Traveling Fellowship in the History of Medicine

Applications are being invited for the Fellowship which is tenable for three months during 1980. Established in memory of the late Dr. Logan Clendening, the Fellowship is of the value of $1,000 and is open to registered medical students of any recognized medical or osteopathic school in the U.S. or Canada. Applicants may elect to travel anywhere in the world to study any aspect of medical history. Application forms, which must be completed and returned by March 15, 1980, can be obtained from Robert P. Hudson, M.D., Chairman, Department of the History of Medicine, University of Kansas Medical Center, Kansas City, Kansas 66103.

THE ADOLF MEYER PAPERS

The Johns Hopkins University is pleased to announce completion of the project to organize and inventory the Adolf Meyer papers. Until four years ago the papers were unorganized and largely inaccessible to scholars; indeed certain portions of the Meyer collection as it now stands were in other hands. During the past four years, however, a project to organize and inventory the collection—one of the largest of its kind in the United States and potentially a major resource in the history of twentieth-century American psychiatry—has been in progress under the direction of Dr. Ruth Leys. Since 1976 the project has been funded by a Medical Library Resource Project grant from the National Library of Medicine. Work has gone forward on schedule, and The Johns Hopkins University now anticipates opening the collection under certain restrictions to qualified scholars in February 1980.

The Meyer papers will be housed in The Alan Mason Chesney Medical Archives of The Johns Hopkins Medical Institutions. The Archives were recently established at Johns Hopkins as a central repository for all archives and manuscripts of the Medical Institutions and to provide facilities for research. Information regarding access to the papers may be obtained by writing to: The Alan Mason Chesney Medical Archives, 35 Turner Auditorium, The Johns Hopkins University School of Medicine, 720 Rutland Avenue, Baltimore, Maryland 21205.

American Osler Society

The next meeting of the American Osler Society will be held in Boston, April 29, 1980 in conjunction with the annual meeting of the American Association for the History of Medicine. Members wishing further details should contact Charles G. Roland, M.D., Department of Family Medicine, Faculty of Medicine, McMaster University, Hamilton, Ontario, Canada L8S 4J9.

Rockefeller Archive Center

The Rockefeller Archive Center has published a brief guide to the Center's holdings which include the papers of John D. Rockefeller, The Rockefeller University, The Rockefeller Foundation, The Rockefeller Brothers Fund, the Laura Spelman Rockefeller Memorial, other organizations founded by the Rockefellers, and individuals associated with the Rockefeller philanthropies. Copies are available from the Center, Hillcrest, Pocantico Hills, North Tarrytown, New York, 10591.

Bethune Conference

The Bethune Foundation is sponsoring a conference, to be held in Montreal, Quebec, November 16-18, 1979, to mark Bethune Year, 1979, the 40th anniversary of Norman Bethune's death in China. The conference will focus on the significant interests and experiences of Bethune in their historical context and their implications for today. For information, write to Bethune Secretariat, 772 Sherbrooke Street West, Montreal, Quebec, Canada H3A 1G1.

University of Louisville, Kentucky

The University of Louisville, Louisville, Kentucky has authorized a division of the History of Health Sciences within the Biomedical Learning Resources Center. Professor Joan Titley Adams has been appointed Director of the new division while still retaining her position as Professor in the School of Medicine. The division proposes to give courses in the history of medicine, conduct research on the medical history of Kentucky and catalogue the book and archives collection of the Kornhauser Health Sciences Library.

Foundation for Advanced Education in the Sciences

The Foundation is sponsoring a lecture series on the history of medicine On September 11, 1979 at the National Institutes of Health, Bethesda, Maryland, Dr. William McNeill, Professor of History at the University of Chicago, presented a lecture entitled "Epidemic Disease in History."

Fellowships in American Military History, 1980-1981

The U.S. Army Center of Military History (CMH) is again sponsoring a program of "Dissertation Year Fellowships" to help stimulate research and study in the field of military history. For the academic year 1980-1981 two fellowships of $4,000 each will be awarded to qualified civilian graduate students whose doctoral dissertation topics pertain to American military history. Applicants must be citizens or nationals of the United States, have demonstrated ability and special aptitude for advanced training and study in military history, be enrolled in a recognized graduate school, and have successfully completed by September, 1980 all requirements for the Ph.D. except the dissertation. The deadline for filing applications is January 24, 1980. For further information write to the Chief Historian, Center of Military History, Department of the Army, Washington, D.C. 20314.

PROGRAMS OF MEETINGS

Josiah C. Trent Society for the History of Medicine, Durham, N.C.

September 20, 1979: "The P.A.'s' Nationwide Adoption of a Duke Innovation," Reginald Carter and James Gifford.

Handerson Medical History Society, Cleveland, Ohio

October 2, 1979: "The Early Years of the Cleveland Clinic," George Crile, Jr.
November 6, 1979: "The Early Years of the Allen Library," Charles Hudson.
January 8, 1979: "Peter Keisogloff and the Allen Library," Robert Cheshier.

Washington Society for the History of Medicine, Washington, D.C.

September 27, 1979: "Midwifery and Family Planning: The Frontier Nursing Service in the Kentucky Mountains," Dale Denton; "A Clinical-Historical Study of the Phantom Limb Phenomenon," Douglas Price.

College of Physicians of Philadelphia

September 19, 1979: "From Centrifuges to Continuous Flow: The Early History of Instrumentation in Clinical Chemistry," Seymour Winsten; "Medical Treasures of the Smithsonian Institution," Audrey B. Davis.

October 17, 1979: "Twentieth Century Psychiatry: Living History in the Life of Kenneth E. Appel, M.D.," Daniel Blain; "The Development of Methods in Clinical Neurology," D. Denny-Brown.

November 21, 1979: "The Hospital Building: Enhancer or Inhibitor of the Provision of Health Care-Historical Perspective," Marvin L. Sachs; "Medical Services in the Roman Army: A Further Evaluation," Allen C. Wooden.

Mayo Foundation History of Medicine Society, Rochester, Minn.

October 3, 1979: "History of Surgical Approaches to the Pituitary Gland," Edward R. Laws, Jr. and Thomas J. McDonald.

Leaders in American Medicine—Francis A. Countway Library of Medicine, Boston, MA.

This film and discussion series sponsored by Boston University School of Medicine, Benjamin Waterhouse Medical History Society, Boston Medical Library, Brown University Program in Medicine, Howard Medical school and Tufts University School of Medicine, is under the chairmanship of G. E. Gifford, Jr., M.D.

October 10, 1979: The History of Ether Anesthesia, Film: "Strange Sleep," Discussants: Leroy Vandam and J. Francis Gladstone.

November 14, 1979: Carl Gustav Jung, M.D. (1875-1961), Film: "Face to Face" (Dr. Jung interviewed by John Freeman), Discussants: Margaret C. L. Gildea, William McGuire, Robert E. Bosnak.

February 13, 1980: Stanley L. Robbins, M.D., Videotape interview, Discussants: John I. Sandron and Stanley L. Robbins.

NEWS FROM ABROAD

Peru

The Peruvian Association of Medical Ethnology and History of Medicine has organized the First World Congress of Folk Medicine. It was held in Lima, Iquitos and Cuzco from October 27-November 2, 1979. Dr. Guenter Risse of the University of Wisconsin, Madison was the American delegate. His paper was entitled "The Importance of the History of Medicine in the Study of Traditional Medicine."

Israel

The Division of the History of Medicine of the Hebrew University—Hadassah Medical School, Jerusalem has issued a report of its teaching and research activities from 1975-1979. For further information contact Samuel S. Kottek, M.D., Head of the Department

FELLOWSHIP OPENINGS

University of Pennsylvania

The Department of History and Sociology of Science of the University of Pennsylvania invites applications for the position of Postdoctoral Fellow for one year, renewable for two additional years, beginning in Summer or Fall 1980, earlier if available. Applicants should have a Ph.D. in the history of science or medicine, or a related field in modern American history. The Fellow will be responsible for research and the writing of a book on the history of the Commonwealth Fund (1918 to present), a private foundation specializing over the years in rural hospitals, mental hygiene, child health, and medical research, and education. Salary will be equivalent to that of an Assistant Professor. The deadline for applications is February 1, 1980. Send inquiries and résumés to Professors Robert E. Kohler, or Rosemary Stevens, Department of History and Sociology of Science, University of Pennsylvania, E. F. Smith Hall 106, Philadelphia, PA 19104.

Hannah Institute for the History of Medicine

The Hannah Institute for the History of Medicine invites applications for the post of Visiting Professor for one term (either but not both) during the academic year 1980-81. For further information please contact T. Gelfand, Ph.D., Program of History of Medicine, Faculty of Health Sciences, University of Ottawa, 275 Nicholas Street, Ottawa, Canada K1N 9A9.

BOOK REVIEWS

JOHANN C. HEINROTH. *Textbook of Disturbances of Mental Life*, or *Disturbances of the Soul and Their Treatment*. Trans. by J. Schmorak with an introduction by George Mora. 2 vols. Baltimore: Johns Hopkins University Press, 1975. lxxviii + 467 pp. $17.00.

These two volumes, the first devoted to theory and the second to practice, make available in English for the first time Heinroth's *Lehrbuch der Storungen des Seelenlebens* which appeared originally in 1818. In it the author attempts to formulate a complete system of psychiatry taking into account both his strongly religious conceptions of man in his relation to God and the universe, and the extensive personal experience he had acquired as "physician for mental illness" at a large asylum near Leipzig.

Heinroth sketches man's ideal mental development as having three stages of increasing consciousness: as a young child he is first aware only of the external world, i.e. partakes of "world-consciousness;" later, as his intellectual powers increase, he differentiates self from the external world progressing to the stage of "self-consciousness." Finally he becomes aware of something that is neither in the world nor in himself, an "above-us" (*Über uns*), which is in fact God's voice speaking through his conscience. This consciousness is called divine Reason (*Vernunft*), and only through it can man become truly human, blessed and free. Mental disease results when an individual chooses—for human beings do have free will (*Willkür*)—to disregard his conscience and thereby loses all chance of becoming happy and free; this is equated with a state of sin.

Heinroth's classification of mental disturbances is based on his fundamental division of the mind (*Seele*) into three components or energies: emotion or affect (*Gemuth*); intellect (*Geist*); will (*Wille*). Hypothesizing that these energies vary only in quantity and not in quality, he adopts a psychopathology that shows a definite dependence on the contemporary medical theories of John Brown. The classification may be briefly summarized in the chart on page 476.

The second volume devoted to practice contains a detailed discussion of the examination of the patient, the types of treatment available, and their appropriate administration. This account is followed by a treatise on the legal aspects of mental illness and a short discussion of faith as a prophylaxis.

J. Schmorak's clear and readable English version of the text is generally very accurate, although, no doubt due to Heinroth's complicated, rhetorical style, some errors are present. The translation's most serious shortcoming relates to Heinroth's basic terminology (e.g. mind, emotion, intellect, will, divine Reason), which the translator has failed to follow. From the context and the scrupulously consistent way Heinroth uses the German terms, it is clear that their meanings for him are narrow and precise,[1] although naturally in normal German usage their

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[1] Cf §7 and §195.

MENTAL DISTURBANCES

Classes (according to the particular energy involved)	Orders (according to the direction of the change in energy) HYPERSTHENIAE	ASTHENIAE	HYPER-ASTHENIAE
EMOTION	Ecstasy	Melancholy	Mixed State
INTELLECT	Madness	Idiocy	Mixed State (confusion)
WILL	Mania	Abulia	Mixed State (timidity)

ranges of meaning are much broader. Failing to grasp this, the translator has often translated passages in isolation, so to speak, ignoring Heinroth's particular terminology.

An example of the result is the following:

> §41 Der in Leidenschaft Befangene tauscht sich über die Gegenstande und uber sich selbst; und diese Tauschung, und der daraus entspringende Irrthum heisst Wahn. Der Wahn ist kein krankhafter Zustand des Gemuthes, sondern des Verstandes, aber im Gemuthe, nehmlich in der Leidenschaft, liegt der Grund des Wahns.

> "The man who is fettered by passion deceives himself about external objects and about himself. This illusion, and the consequent error, is called madness. Madness is a disease of the reason and not of the soul, but it originates from the passion within the soul." (p 16)

Heinroth's point is that a disturbance of the emotions, which he terms passion, can go on to affect the intellect, causing a failure of that function. The third sentence, then, should be rendered somewhat as follows:

> Madness is not a pathological condition of the emotions, but rather of thought, although its source does lie in the emotions, that is in the passion.

The word *Verstand* employed here denotes the function of the intellect, i.e. rational thought. It is quite removed from *Vernunft* (perception of God's meaning as expressed by the conscience), a fact which the translator has ignored, translating both with "reason."[2] The havoc this creates is well demonstrated by the following passage from §46:

> Das Seelenleben des hohern Alters, des Alters der Reife, gesteigert und gelautert durch die Ubungen der Schopferkraft auf den fruheren Stufen, wirkt und schafft nun im Kreise der *Vernunft*, und wendet seine Schopferkraft von der Welt und Liebe der Sinne, der freyen

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[2] For *Vernunft* cf. §18-§22, for *Verstand* cf. §65 and §70

> Phantasie, und des *Verstandes*, ab, und fasst sie zurück und führt sie aufwarts in die unsichtbare, unbeschrankte Welt der hochsten Freyheit und der hochsten Liebe.

> "The mental life of advanced age, the age of maturity, intensified and purified by the exercise of the creative force at the previous stages, now operates in the sphere of *reason* and turns the creative force away from the world and from the love of the senses, of free imagination and *reason*, grasps them back, and lifts them up into the invisible, unconfined world of the highest freedom and highest love." (p. 19)

The striking contradiction present in the translation:

> "The mental life . . now operates in the sphere of reason and turns the creative force away from . . . the love of . . . reason . . "

immediately disappears if Heinroth's terminology is accurately followed:

> "The mental life . . . now operates in the sphere of divine Reason and turns the creative force away from . . . the love of . . . ⟨mere⟩ rational thought . . ."

Heinroth's terminology should have been discussed and clarified in a translator's introduction or possibly by means of a glossary. As it is, the English reader is often left to wallow in inscrutable ambiguities and inconsistencies absent in the original.

G. Mora's introduction provides a clear and useful exposition of Heinroth's life, writings and influence, as well as the necessary background material for the reader to set him in context. In some points, however, Dr. Mora seems to have ascribed beliefs to Heinroth that he did not hold. On page xviii, for example, we read:

> "Central to Heinroth's system is the concept of normality which is based on a healthy and measured balance between the two polarities of life, presented sometimes as body and soul and sometimes as nature and God (§§27, 33, 44)."

Not only does Heinroth not advocate a polarity of body and mind, he argues often and forcefully against it: e.g.

> §6 Thus, there is only one Self or I of man which consists of body and mind, of the internal and the external, and the one cannot be thought of without the other. It is not a union of two different things, but a single life which has developed in two different directions: externally (in space) as body, internally (in time) as mind.[3]

Likewise, human nature is not portrayed in opposition to God, but rather as tending to bring the individual to his highest level of perfection in accordance with God's plan.[4]

On the technical side, the work's attractive printing and binding are offset by a considerable number of typographical errors.[5] This is particularly the case where Greek quotations, which incidentally along with their Latin counterparts remain untranslated, are involved; these are either printed very inaccurately in Greek characters[6] or transliterated somewhat unclearly.[7] Another formal peculiarity is the translator's use of the abbreviation C.E.[8] instead of A.D. to signify dates in the Christian era.

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[3] Cf. also §25 and §151

[4] Cf. §36.

[5] E.g p. x "disired", p. xvi "her", p 54 "balck", p. 419 "mile"

[6] E.g. p. 29 and p. 384.

[7] E.g p. 53 *"Pothen ayte e sophia?"*

Reviewed by PAUL POTTER, M.D., Ph.D., Hannah Professor of the History of Medicine, University of Western Ontario, London, Ont.

MORRIS H. SAFFRON. *Surgeon to Washington: Dr. John Cochran 1730-1807.* New York: Columbia University Press, 1977. xiii + 302 pp. Ill. $17.50.

Dr. Morris Saffron calls the subject of his excellent study "a comparatively unknown man," but in editing the war correspondence of Surgeon-General John Cochran he has brought him out of that shadowy category and presents him as the prime mover in creating an efficient Army Medical Service in the later years of the Revolutionary War. He shows him to have been a skilled and tireless surgeon, and an active and sociable citizen, who earned the friendship of the young Lafayette and of Washington himself. Great men acquire a popular image of superhuman imperturbability, and it is pleasant to find Washington amused by Cochran's "buoyant good nature" and quite light-hearted himself in his contacts with Cochran's relatives. We also see his infinite capacity, when he attends to Cochran's worries in the Medical Department while deeply involved in the major strategy of the war, prompt to back his Surgeon-General when Congress was penurious or field officers treated their medical staff as social inferiors.

The book falls into three roughly equal parts: a long and sympathetic "Life" of Cochran, his official wartime Letter Book, and a selection of personal correspondence between 1770 and 1793. These texts are supported by a scholarly apparatus of reference notes, a bibliography of sources, and an admirable name-index which includes life-dates and brief career details for each person named. Every care has clearly been taken to make the book authoritative and at the same time attractively readable. Dr. Saffron is the ideal biographer for Cochran; from his own distinction as a New Jersey physician and historian, he is familiar with the terrain of his subject's life. I wish he had provided a map to indicate Cochran's frequent changes of location, as war dictated, in a field that stretched from Albany to Philadelphia and sometimes further. This travel was done on horseback over rough country in dangerous circumstances by a man in his fifties with pressing responsibilities.

The War Letters cover only the beginning of Cochran's appointment as Director-General, from February 1781 to May 1782, when the war was nearly over. Dr. Saffron records that "the Letter Book was mislaid early in 1782; the date of its recovery is not known and it is doubtful whether a continuation ever existed." Cochran's descendants have made it available to historians for the past hundred years, and since 1939 it has been on loan to the New York Academy of Medicine, but not published in full till now. Most of the letters are concerned with day to day official business, but Cochran often inserted personal comments, cheerful or acid as occasion demanded. He faced the same malpractice which John Hunter withstood in England: colonels appointed regimental surgeons without considering their qualifications or the approval of the Surgeon-General. The letters give a clear picture of a man determined to carry out his duties efficiently in spite of personal rivalries in high places and insufficient financial support.

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[8] E.g. p. 50 and p. 53.

For the medical historian the importance of this book lies in the fascinating account of Cochran's life and work. He was a younger son in a Scotch-Irish family, who had left Ulster under pressure from English trade discrimination "similar to that which was to alienate the American colonies," and had settled on the upper Susquehanna, then the western frontier of Pennsylvania. He was apprenticed to a surgeon in the nearby town of Lancaster, but gained his real surgical experience when serving with British army surgeons in the French and Indian Wars of 1755-60. Posted to Albany, he married into the Schuyler family, "rich and influential grandees" from the Dutch oligarchy of New York. His brother-in-law Philip Schuyler was a typical colonial gentleman, austere and upright, an able business man and a patriotic "improver;" through him Cochran first met Washington. From 1763 to 1771 Cohran practised in the growing town of New Brunswick, where he helped to found the Medical Society of New Jersey and promoted medical licensing. He turned to the exclusive practice of smallpox inoculation, but was soon caught up in preparation for the Revolution. Dr. Saffron gives a full account of his busy life as a surgeon on active service and as personal surgeon to Washington. The early years of the war were beset by intrigues about control of the Medical Department; Dr. Saffron shows that the "Shippen-Cochran" plan for its reform was mainly Cochran's work. Though appointed Director-General only in 1781, he had long been in Washington's confidence. He had to contend with smallpox epidemics in camp as well as battle casualties; his most dramatic experience was his rescue of the wounded Lafayette at Brandywine. There were also personal worries for the safety of his family at Albany while he was on service further south. After the war Cochran practised for many years in New York City, not without adventures. In retirement he sought sinecure posts in the finance department there; they proved to be responsible offices beyond his capacity, for he was no business man though a good organizer. His whole career, revealed by Dr. Saffron's researches, gives a most informative portrayal, with many incidental sidelights, of the development of medical practice in America through the second half of the eighteenth century.

Reviewed by WILLIAM LEFANU, M.A., formerly Librarian, Royal College of Surgeons of England, London.

A. RUPERT AND MARIE BOAS HALL, eds. *The Correspondence of Henry Oldenburg*. Volume IX, 1672-1673. Madison: University of Wisconsin Press, 1973. xxx + 706 pp. Index. $20.00.

Volume IX of *The Correspondence of Henry Oldenburg* offers an informative comparison with the earlier volumes of the publication. With each volume, the scientific content of the correspondence has grown, until with volume IX it reaches a wholly different order of magnitude. Where earlier the dominant theme was Oldenburg's primordial urge to record every curiosity and prodigy of nature, by 1672 he had become, despite himself, the corresponding secretary of an international scientific community. The change had little to do with his own conscious intentions. The original Oldenburg was still there in 1672, receiving reports on monstrous births and inquiring diligently after people who have lived to exceptional age, but during the course of fifteen years a coherent scientific movement had taken shape. Despite his own primitive Baconianism, the role he defined for himself proved to be immensely useful to an intellectual community to which he himself never really belonged. "I am not unmindful of the great value of the combined efforts of learned and skillful men in advancing a sound knowledge of nature," he stated, even while deprecating his own capacities; "accordingly I do my best by means of a correspondence to compile their researches and ideas (scattered as these are up and down the civilized world) and, if I can, induce them to communicate their observations, experiments, and discoveries to each other [so that] some of them may investigate, consider, and turn to human uses the opinions of others . . ." (pp. 415-16.)

Accordingly, in 1672-3, the Royal Society published Malpighi's *De formatione pulli in ovo,* and Malpighi in turn learned about De Graaf's work on female organs through Oldenburg. Despite the war at sea, the same De Graaf communicated the first microscopical observations of Anthony van Leeuwenhoek, who now found the vehicle to publish his investigations. From Danzig, Hevelius complained about the failure of French astronomers to keep him informed about their work. It was Oldenburg who wrote Hevelius about Cassini's discovery of two more satellites of Saturn. Above all, two giant figures cast their shadows across volume IX, Leibniz and Newton. This volume is not their introduction; both appeared briefly in earlier ones. In different ways, each testified to the signal importance of a man like Oldenburg to the scientific community. One of Leibniz's letters has considerable mathematical content; most of them are the newsy reports of scientific activity that Oldenburg sought to cultivate. Long and full, they literally exude the eagerness of a young man, recently emerged from provincial obscurity, to establish his position in the intellectual centers of western Europe. If Oldenburg was delighted with Leibniz's correspondence, Leibniz was doubly delighted to be the correspondent of the Secretary of the famous Royal Society of London. In the case of Newton, interest centers less on his own correspondence, which has all been published before and is only summarized in this edition, than in the correspondence about him. Fulfilling his self-appointed function, Oldenburg insured that the description of his telescope and the publication of his theory of colors in the *Philosophical Transactions* did not pass unnoticed. From Paris, Venice, Florence, and Danzig, not to mention remote corners of England, Oldenburg received comments on the telescope in response to the *Philosophical Transactions,* and he drew it to the attention of an imperial official in Vienna. So also with the theory of colors, which he summarized in a number of letters to non-English speaking locales where the paper in *Philosophical Transactions* might not have been understood. To Huygens, Leibniz, and Sluse he also sent brief résumés (which he had received from Collins) of Newton's mathematical prowess. We have not fully comprehended the extent to which Newton's brief emergence in 1672 established his fame throughout European scientific circles. Thanks to this edition, in which

Oldenburg's indefatigable efforts are laid out, we shall not again be mistaken in that respect.

Reviewed by RICHARD S. WESTFALL, Ph.D., Professor, Department of History and Philosophy of Science, Indiana University, Bloomington, Ind.

E. ASHWORTH UNDERWOOD. *Boerhaave's Men at Leyden and After.* Edinburgh: Edinburgh University Press, 1977. vii + 227 pp. Ill. £8.

Hermann Boerhaave (1668-1738) created in Leyden the most famous medical center of the eighteenth century which is particularly memorable for its pupils, including Haller, Cullen, Pringle, and the leaders of the Vienna school, Van Swieten and De Haen. Boerhaave, like Sydenham, was an important reviver of the Hippocratic method of visualizing clinical problems, which he taught at the bedside. He was the first to describe rupture of the esophagus, to establish the site of pleurisy exclusively in the pleura, and to prove that smallpox is spread only by contagion. He used the Fahrenheit thermometer in his clinic. During his teaching career, no fewer than 746 English-speaking students of medicine received all or part of their training in Leyden.

Through careful and critical research, Underwood has traced the careers of the students from Great Britain who studied in Leyden under Boerhaave's tutelage (1701-1738). The book is divided into two parts. The first presents the Leyden period and catalogues all those students who studied there—their numbers, nationality and early education; their matriculation and graduation; their length of stay and their promotions. This section of the book displays vividly the process of medical education in that period and reveals clearly the peripatetic nature of student life and the vagaries surrounding the attaining of the M.D. degree.

The second part portrays the story of what these men accomplished in Great Britain and how they influenced the development of British medicine. One is given a glimpse of the role of the Establishment versus all others who aspired to practice medicine. One of the most important features of this section is what appears to be the best account of the founding of the medical school in Edinburgh, the graduates of which had such an important role in medicine during the colonial period. Underwood discusses their work in the establishment of hospitals and their contributions to teaching and research.

Underwood has relied very heavily on the Matriculation Album of students in the University of Leyden, which was transcribed and published by the University in 1875, and on the well-known reference work, *English-Speaking Students of Medicine at the University of Leyden* by R. W. Innes Smith (Edinburgh, 1932) but has ranged well beyond his major sources. His Introduction includes a two-page tribute to the work of Innes Smith ("These investigations . . . covered virtually the whole of the academic world during the period with which we are concerned"). On the other hand, we are warned of the shortcomings of Edward Peacock's *Index of English-Speaking Students who have graduated at Leyden University* (many of them matriculated at Leyden but did not graduate) and of those of the *Dictionary of National Biography* (*DNB*) which in many cases relied on Peacock's *Index*. Unlike these reference tools, good and bad, Underwood's book is a discursive work and it does not altogether neglect analysis, statistical and other.

While this book is to a large degree a catalogue of facts about Boerhaave's men and perhaps will serve better as a reference volume than as light bedtime reading, Underwood has given us, through his careful and critical biographical and narrative approach, an important contribution to the history of eighteenth-century medicine.

Reviewed by A. McGehee Harvey, M.D., Director Emeritus and Professor Emeritus, Department of Medicine, The Johns Hopkins University, School of Medicine, Baltimore, Md.

David M. Vess. *Medical Revolution in France, 1789-1796*. Gainesville, Florida: University Presses of Florida, 1975. 216 pp. $12.00.

The development of the Paris clinical school and its impact on medicine have been discussed in the historical literature, but the origins of this school and its relationship to the changes wrought in the medicine of the Ancien Régime, by the opening up of the profession, the new system of medical education, and the new status of surgery in the Revolutionary era, have not received detailed scholarly attention until recent years. In his book David M. Vess makes a contribution to this area of research by tackling the changes occurring in the period between 1789 and 1796, emphasizing especially the effects of the military medical service in the war years as a stimulus to the new medicine. He first discusses the involvement of medical men in the Revolution and the debate over both the nature of medical education and the character of the medical profession which ensued. He then describes how a military medical service equipped with a substantial staff became a compelling necessity; the effect the techniques learnt in battle surgery had on the treatment of wounds and disease; and the development of what he terms "a surgical approach to medicine" characterized by pragmatic action rather than by speculative theory. In researching his topic, Vess has performed a service for historians in drawing attention to valuable archival material at the Musée Val-de-Grâce and the Archives historiques du Service de Santé militaire.

Vess' reliance on these archives and his emphasis on the role of military medicine, however, are responsible for certain difficulties in his interpretation of medical developments. His discussion of French medicine before the Revolution is sketchy. It relies too much on clichés about the inadequacies of medicine and takes little cognisance of reforming trends, already apparent well before the Revolution, which were instrumental in the changes that occurred in the period with which Vess is concerned. It is unfortunate that Vess was not aware of recent historical work on medicine in France both in the late eighteenth century and in the Revolutionary period. Although offering much informative new material in his chapters on the medical aspects of the Revolutionary wars, his claims for the effects of the exigencies of wartime on the development of medicine seem overstated. The book is also marred by many factual inaccuracies in both text and footnotes. Fourcroy, for instance, took care of the books of the Royal Society of

Medicine and not those of the Academy of Sciences (p. 17) and the first two footnotes in chapter 3 appear to have been reversed. The most entertaining slip occurs on page 16 where the university which gave Marat his medical degree is identified as St. André d'Ecosse, located by Vess in the district of Eure, when in fact it was the venerable St. Andrew's University in Scotland which accorded him a certificate. Vess then has uncovered valuable information on French military medicine in the Revolutionary era but does not succeed in his aim of providing a synthesis of developments in medicine in both the military and civilian contexts.

Reviewed by CAROLINE HANNAWAY, Ph.D., Assistant in the History of Medicine, Institute of the History of Medicine, The Johns Hopkins University, Baltimore, Md.

Kremers and Urdang's History of Pharmacy. Revised by Glenn Sonnedecker. 4th ed. Philadelphia and Toronto: J. B. Lippincott, 1977. xv + 571 pp. Ill. $21.60.

This classical text on the history of pharmacy appeared first in 1940. The first volume of its kind to be written by American authors, it has retained its position of preeminence through the passing of the years. The fourth edition, revised by Dr. Sonnedecker, has continued the quality of excellence and accuracy that has characterized earlier editions of the volume.

The contents of the book are divided into four parts: (1) Pharmacy's Early Antecedents, (2) The Rise of Professional Pharmacy in Representative Countries of Europe, (3) Pharmacy in the United States and (4) Discoveries and Other Contributions to Society by Pharmacists. Each of these parts is skillfully coordinated like the links of a chain connecting the status of the profession to its position in the present social order.

The profession of pharmacy should be rightfully proud of its good heritage so well delineated in this volume. The treatise is a challenge for the future of the profession and should be read by everyone associated with drugs in the treatment of disease.

Reviewed by JOHN C. KRANTZ, JR., Ph.D., Emeritus Professor of Pharmacology, University of Maryland School of Medicine, Baltimore, Md.

THE BULLETIN RECENTLY RECEIVED*

Dean Conrad Allard. *Spencer Fullerton Baird and the U.S. Fish Commission.* New York: Arno Press (A New York Times Company), 1978. xii + 427 pp. $25.00.

David W. Baird. *Medical Education in Arkansas.* Memphis: Memphis State University Press, 1979. 505 pp. Ill. $18.00.

Marc A. Barblan. *Journalisme médical et échanges intellectuels au tournant du XVII siècle: Le cas de la Bibliothèque Britannique (1796-1815).* Geneva: 1977 (Extract from *Archives des Sciences,* 1977, *30:* 283-398). 115 pp.

Murray L. Barr. *A Century of Medicine at Western: A Centennial History of the Faculty of Medicine, University of Western Ontario.* London, Canada: University of Western Ontario, 1977. xiv + 672 pp. Ill. $15.00.

Bernard Becker. *Collection in Ophthalmology: Catalog of the Bernard Becker, M.D. Collection in Ophthalmology at the Washington University School of Medicine Library.* St. Louis: Washington University School of Medicine Library, 1979. 103 pp. $12.50.

Walter Birchler. *Die Augenanatomie des Fabricius ab Aquapendente (1537-1619): Ubersetzung von "Oculi dissecti historia" mit Kommentar* Zurich: Juris Druck & Verlag Zurich, 1979. (Zurcher Medizingeschichtliche Abhandlungen, Neue Reihe Nr. 128). 74 pp. Swiss Fr. 15.

George Bugliarello & George A. Schillinger (Editors). *Technology In Society: An International Journal.* (Vol. 1, No. 1). Elmsford: Pergamon Press, 1979. 86 pp. Ill. $15.00.

Francesc Bujosa i Homar. *La Academia médico-práctica de Mallorca (1788-1800).* Valencia, 1975 (Cuadernos Valencianos de Historia de la Medicina y del la Ciencia, XVI, Serie C). 163 pp.

Directory of Archives and Manuscript Repositories in the United States. Washington, D.C.: National Historical Publications and Records Commission, 1978. 905 pp. $25.00.

John P. Dolan. *Health and Society: A Documentary History of Medicine.* New York: The Seabury Press, 1978. 244 pp. $12.95.

John Duffy. *The Healers: A History of American Medicine* Urbana: University of Illinois Press, 1979. ix + 385 pp. $5.95 (paperbound).

Reuben Fine. *A History of Psychoanalysis.* New York: Columbia University Press, 1979. xii + 686 pp. $24.95.

Roy R. Grinker, Sr. *Fifty Years in Psychiatry: A Living History.* Springfield: Charles C Thomas, 1979. xiii + 263 pp. $15.50.

Hippocrates. *La nature de l'homme.* Edited and translated with commentary by

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* The *Bulletin* reserves freedom of decision as to the publications to be included in this section. Items received, other than those assigned for review are ultimately incorporated into the collection of the Institute of the History of Medicine.

Jacques Jouanna. Berlin: Akademie Verlag, 1975 (Corpus Medicorum Graecorum I, 1, 3). 331 pp. D.M. 84.

The History of Embryology and Teratology (Exhibition Catalogue). Jerusalem: The Hebrew University-Hadassah Medical School, 1978 31 pp. Ill.

Josiah Wedgwood: 'The Arts and Sciences United' (Exhibition Catalogue). Staffordshire: Josiah Wedgwood & Sons Limited, 1978. 80 pp. Ill.

Pauline A. Keehn. *The Effect of Epidemic Diseases on the Natives of North America*. London: Survival International, 1978. 21 pp. $5.00.

Huldrych M. Koelbing. *Christian Sigismund Fingers Dissertation "Uber den schadlichen Einfluss von Furcht und Schreck bei der Pest" (Halle 1722)* Aarau, Frankfurt am Main and Salzburg: Verlag Sauerlander, 1979. (Veroffentlichungen der Schweizerischen Gesellschaft fur Geschichte der Medizin und der Naturwissenschaften, Number 33). 52 pp. Fr. 15.

The Life and Times of William J. Stapleton Jr., M.D. Detroit: Published for the William J. Stapleton, Jr., M.D. Foundation for Health Education, 1978. 16 pp. Ill.

G. A. Lindeboom. *Inleiding Tot de Geschiedenis der Geneeskunde*. Amsterdam: Rodopi, 1979. 327 pp. Ill. Hfl: 30.

Una Maclean. *Magical Medicine: A Nigerian Case-Study*. New York: Penguin Books, 1977. 166 pp. $1.95 (paperbound).

Francisco Alvaro Méndez. *Historia del periodismo médico y faracéutico en España* (Introducción, edición e indices de J. Riera). Valladolid, 1978 (Acta Historico-Médico Vallisoletana, Monografías, VIII). 179 pp.

Harold C. Neu. *Antimicrobial Prescribing*. New Jersey: Antimicrobial Prescribing Inc., 1979. 111 pp. $19.95.

William B. Ober. *Boswell's Clap and Other Essays. Medical Analysis of Literary Men's Afflictions* Carbondale: Southern Illinois University Press, 1979. xiv + 219 pp. Ill. $17.50.

J. M. Lopez Piñero; Navarro V. Brotons; Marco S. Portela. *Materiales Para La Historia De Las Ciencias En España: S. XVI-XVII*. Valencia: Pre Textos, 1976. xi + 314 pp. Ill.

J M. Lopez Piñero. *Las Nuevas Tecnicas de la Investigacion Historicomedica: Discurso de Recepcion del Academico Electo*. Valencia: Real Academia de Medicina de Valencia, 1975. 38 pp.

Stanley Joel Reiser. *Medicine and the Reign of Technology*. New York and London: Cambridge University Press, 1978. xi + 317 pp. $14.95.

Steffen Richter. *Wolfgang Pauli: Die Jahre 1918-1930· Skizzen zu einer wissenschaftlichen Biographie*. Aarau: Verlag Sauerlànder, 1979. (Veroffentlichungen der Schweizerischen Gesellschaft fur Geschichte der Medizin und der Naturwissenschaften, Number 32). 112 pp. Fr. 25.

Albert Rothenberg & Carl R. Hausman (Editors). *The Creativity Question*. Durham: Duke University Press, 1976. xiv + 366 pp. $14.75.

Santiago Ramon y Cajal. *Concepto, método y programa de anatomía descriptiva y general (1883)*. Introduction by J. M. Lopez Piñero. Valencia: Valencia Cultural S.A., 1978.

Harry A. Savitz. *A Jewish Physician's Harvest*. New York: KTAV Publishing House, Inc., 1979. xiv + 227 pp. $12.50.

Jürg Steiner. *Erich Hugo Ebstein (1880-1931): Biographie und wissenschaftliches Werk.* Zurich: Juris Druck & Verlag Zürich, 1979 (Zürcher Medizingeschichtliche Abhandlungen, Neue Reihe Nr. 127). 124 pp. Swiss Fr. 25.

F. Kraupl Taylor. *The Concepts of Illness, Disease and Morbus.* New York: Cambridge University Press, 1979. ix + 131 pp. $14.95.

John Henry Wadland. *Ernest Thompson Seton: Man in Nature and the Progressive Era, 1800-1915.* New York: Arno Press (A New York Times Company), 1978. xii + 531 pp. Ill. $32.00.

Gerhard Emil Weidmann. "*De Sympathia et Antipathia liber unus*" *von Girolamo Fracastoro: Einführung und Übersetzung.* Zurich: Juris Druck & Verlag Zurich, 1979. (Zurcher Medizingeschichtliche Abhandlungen, Neue Reihe Nr. 129). 226 pp. Swiss Fr. 46.

Abner L. Weisman. *Medicine Before Columbus as Told in Pre-Columbian Medical Art.* New York: Pre-Cortesian Publications, Inc., for the Weisman Museum and Archives of Ancient Medicine of the Americas, 1979. x + 152 pp. Ill. $14.50.

Ernest Wickersheimer. *Dictionnaire biographique des médecins en France au moyen âge.* Supplément. Edited by Danielle Jacquart. New Edition. Geneva: Librairie Droz, 1979. 365 pp.

David Widgery. *Health in Danger: The Crisis in the National Health Service.* Hamden, Conn: Archon Books, 1979. xix + 178 pp. $17.50.

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FIFTY YEARS IN PSYCHIATRY: A Living History *by* **Roy R. Grinker, Sr.,** *Michael Reese Hospital and Medical Center, Chicago.* This highly readable account provides an overview of the progress that has been made in the field of psychiatry in the last fifty years. Retrospections on the breakthroughs made during the 1950's and 1960's as well as considerations of the specialty's future goals offer the reader a full perspective of the continuing developments within the field. Chapters are included on the development and maturation of ideas and/or practices in definition, diagnosis and classification; psychosomatic medicine; depressions; schizophrenia; and research. Personal glimpses of Doctor Grinker's life as a student and beginning psychiatrist complement the text. *'79, 280 pp., 1 table, $15 50*

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CUSHION INTO LAUNCHING PAD

THE FIFTIETH ANNIVERSARY OF THE INSTITUTE OF THE HISTORY OF MEDICINE

At the banquet which wound up the Fiftieth Anniversary Celebration of the Institute of the History of Medicine (October 17-18, 1979), Dr. Robert S. Morison, former Director for Medicine and Natural Sciences, the Rockefeller Foundation, spoke on "The Foundation Interest." Why did the Foundation establish the Institute? For what specific purpose or purposes? Dr. Morison's account of those long-ago deliberations will be published with the rest of the transactions of the splendid two-day meeting which it climaxed. Meantime we may observe that his research last summer at North Tarrytown may not have been altogether conclusive—not all historic events leave perfectly clear traces—but it led to the pretty definite finding that one of the Foundation's chief interests when, in 1926, it enabled the Johns Hopkins to establish Dr. William H. Welch as the first Professor of the History of Medicine and then, three years later, to open the Institute was to provide a comfortable lodging place for the retirement or semi-retirement of Dr. Welch. It was probably surprised no little, and not much more than the University, when Welch himself, whose concept of his new role was that he should make broad the way, went off to Europe, specifically to Leipzig, not only to buy books, which he did, but also to capture a medical historian, and he brought back (although not at once) the dynamic Professor Henry E. Sigerist. The cushion had turned into a launching pad.

The program of the Fiftieth Anniversary Celebration will be found elsewhere in this issue. The principal speakers (of whom there were nine in addition to Dr. Morison) had not been assigned their topics except that three of them were to speak on themes linking the Institute and the Welch Library during the half day given over to a joint session of the two institu-

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tions with a birthday, and a great deal else, in common. Each of the other six, in no way organized into a symposium, had been invited to speak on whatever was occupying him or her as research enterprise. It was hoped—so we murmured to each—that some attention could be paid to what may have happened to his theme in the past fifty years. Would it have found a place at such a meeting in 1929? Had attitudes to it changed markedly in the interval? Had new sources, and new kinds of sources, emerged? Did it serve to illustrate a more or less novel methodology? The parenthesis in the invitation was taken very seriously by some, less so by others, but the upshot was an extremely interesting program which did not flag at any point. From superior work of a sound and welcome traditional (solidly medical) kind to a specimen of the more innovative history which has (paradoxically?) long been associated with the great French historical journal, the *Annales,* also celebrating this year its fiftieth anniversary—from Glisson and Wepfer to the origins of MEDLARS, this program showed many of the strengths and even hints of some of the possible weaknesses of current work in the history of medicine; it exhibited aspects of professional, social and intellectual history, the history of people, history of ideas, history of disease. As main speakers (forty minutes each) or principal commentators (twenty minutes) it supplied a microphone to historians from five European countries, from Canada and from the United States, neglecting, perforce, several countries on either side of the Atlantic its planners would have liked to see represented. No society other than the American Association for the History of Medicine and no institution as such other than the Johns Hopkins Institute itself was exemplified on the program—although several offered brief and cordial greetings (one even presenting seals) at one or other of the luncheons. One evening was given to films and videotapes and to the presentation of a memorial volume in honor of Dr. Sanford V. Larkey.

A more highly structured program would no doubt have been more coherent—duller, possibly, too—but the excellent fare, both intellectual and culinary, which was put before a great many of the Institute's friends and well-wishers, with one hundred percent (nearly) of its alumni, drew thanks and plaudits from all or almost all. To all who participated and all who listened and applauded go the warm thanks of the Institute and Library staff.

LLOYD G. STEVENSON

AMERICANISM VERSUS SOVIETISM: A STUDY OF THE REACTION TO THE COMMITTEE ON THE COSTS OF MEDICAL CARE

FORREST A. WALKER

> There is, moreover, a far greater concern than the rights of the Physician to practice. . . . There is the question of Americanism versus sovietism for the American people.[1]

This provocative statement appeared in the *Journal of the American Medical Association* shortly after the publication of the final report of the Committee on the Costs of Medical Care. Statements of this kind were not unusual. The CCMC report ushered in a period of heated debate over the question of American medical care. In a sense, the debate has never ended.

In hindsight, the recommendations of the Committee appear mild if not conservative, but at the time, to many, they appeared exceedingly liberal if not radical. The CCMC did not intend to reap a whirlwind of controversy. It merely wanted to inform the public about existing health care conditions and to recommend goals that would provide for more economical and effective medical care. Its publications were the most comprehensive studies ever made concerning the status of health care in the nation.

The CCMC's altruistic aim was typical of the era between World War I and the Great Depression.[2] Intellectuals believed in social surveys, governed by scientific methods; and they furthermore believed that these would help solve complex social problems. The views of the CCMC founders reflect this attitude.

By the beginning of the twentieth century, great advances in science had indeed brought about better health care. Improved care, however, resulted in higher costs, and pre-World War I Progressives became interested in the problem. The American Association for Labor Legislation campaigned actively for state-level health insurance programs for industrial workers and presented a so-called "Standard Bill" in 1916 which

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[1] "Editorials," *JAMA*, Dec. 10, 1932, *99:* 2035.

[2] John A. Kingsbury, *Health in Handcuffs The National Health Crisis and What Can Be Done* (New York. Modern Age Books, 1939), p. 23.

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they hoped would serve as a guide for state legislation. Nothing came of this plan. Since Germany had pioneered state health insurance, critics branded it as a German idea; and because of the anti-German sentiments prevalent during World War I plus the vigorous opposition of several insurance companies, and a growing skepticism among several prominent physicians, the AALL movement had virtually died out shortly after the end of the War.[3]

During these years the American Medical Association was not among the initial opponents of health insurance. In fact, several high-ranking AMA officials, including Dr. Rupert Blue, AMA President in 1916, supported the AALL plan.

By 1920, however, a noticeable change had begun to take place in the thinking of the AMA leadership. At the New Orleans convention of that year, the delegates adopted a resolution condemning any insurance schemes "regulated by any state or the Federal government."[4] During the 1920s some of the more salient examples of AMA opposition were its stand against state medicine for veterans (except cases directly related to service injuries), group practice, contracted salaries for doctors, and the federal program of providing funds to the states for maternity benefits under the terms of the 1921 Sheppard-Towner Act.[5]

Not all physicians agreed with this new conservative trend. Ray Lyman Wilbur, President of the AMA in 1923, spoke out forcefully for a new approach. Wilbur publicly called for better health care and challenged medical leaders to come forward with bold new ideas.[6] Much in this same innovative spirit, a group of fifteen delegates to the 1926 AMA convention held a meeting called the Conference on the Economic Factors Affecting the Organization of Medicine.[7] The delegates exchanged ideas relating to medical economics, and before the meeting adjourned several of them decided to set up a committee that would continue the inquiry and would report at the next annual AMA convention.

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[3] Forrest A. Walker, "Compulsory health insurance: The next great step in social legislation," *J. Amer. Hist.*, 1969, *56*. 295-302. Ronald L. Numbers, *Almost Persuaded, American Physicians and Compulsory Health Insurance 1912-1920* (Baltimore: Johns Hopkins University Press, 1978), pp. 112-114.

[4] "Report of Reference Committee on Hygiene and Public Health," *JAMA*, May 1, 1920, *74*: 1319.

[5] James G. Burrows, *AMA: Voice of American Medicine* (Baltimore: Johns Hopkins University Press, 1963), pp. 157-158, 164-165, 171-176.

[6] *New York Times*, June 5, 1923, Nov. 2, 1923.

[7] Harry H. Moore to Ray Lyman Wilbur, May 3, 1927, Ray Lyman Wilbur Papers, Lane Medical Library, Stanford University (Wilbur Papers); Committee on the Costs of Medical Care (CCMC), *Medical Care for the American People: The Final Report of the Committee on the Costs of Medical Care* (Chicago: University of Chicago Press, 1932), p. xvi (hereafter cited as *Final Report*).

This group, known as the Committee of Five, was composed of Dr. Winford H. Smith, Director of the Johns Hopkins Hospital, Dr. Lewellys F. Barker, a distinguished member of the Johns Hopkins Medical School, Dr. Walton H. Hamilton, who at this time was professor of economics at the Brookings Institute, Dr. C. E. A. Winslow, professor of public health at Yale, and Dr. Michael M. Davis, former Director of the Boston Dispensary and a prolific writer of articles on the sociological effects of health care. Dr. Smith served as chairman, and Harry M. Moore, an economist with the United States Public Health Service, although not an official member of the Committee, served as secretary.[8]

Shortly before the 1927 convention, the Committee of Five asked Dr. Ray Lyman Wilbur to preside at the forthcoming meeting. Wilbur, a former AMA President, was then President of Stanford University and had recently been appointed as Secretary of the Interior under Herbert Hoover. During the convention he led a spirited discussion attended by nearly sixty interested persons. In the course of the meeting it was decided to establish a long-range group called the Committee on the Cost of Medical Care which would, over a five-year period, study the entire economics of health care.[9] At the same meeting, Wilbur received an endorsement to become permanent chairman of the newly established Committee on the Cost of Medical Care and an agreement was reached to set up an Executive Committee. Moore was appointed Director of Research, a position which put him in charge not only of research but all administrative duties as well.[10]

Committee membership was not limited to physicians but included representatives of all professionals in the medical field: public health people, hospital administrators, and dentists. Economists and other representatives from the non-medical world were also included. At all times a balance of interested people representing a variety of occupations was sought. From twenty-one members, the CCMC gradually increased to forty-eight by the time the final report was issued.[11]

Shortly after the formation of the CCMC, the Twentieth Century Fund had promised the Committee of Five $10,000 for a study, and soon after its formal organization the CCMC received a grant of $15,000 from the Milbank Memorial Fund. Eventually six other foundations—the Carnegie Corporation, the Josiah Macy Jr., Foundation, the Russell Sage Foundation, the New York Foundation, the Rockefeller Foundation, and the Julius Rosenwald Fund—gave financial support amounting altogether to nearly a million dollars.[12]

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[8] CCMC, *The Five-Year Program of the Committee on the Costs of Medical Care* (Washington, D.C.: The Committee, 1929), p. 10.

[9] Moore to Wilbur, April 12, 1927, Wilbur Papers.

[10] *Final Report*, p xvi; I. S. Falk, Interview conducted by Forrest Walker, New Haven, Conn., Aug. 28, 1970, in author's possession.

[11] Falk, Interview.

Although he was a good promoter, Moore had difficulties in getting the research moving. Realizing this, the CCMC Executive Committee authorized Michael Davis to find a good medical research specialist. As early as December 1928, Davis approached I. S. Falk, who at that time taught hygiene and bacteriology at the University of Chicago. After some hesitation, Falk resigned his teaching position and joined the CCMC as assistant to Moore with the title of Associate Director of Study.[13] By the time Falk joined the CCMC, only two publications had been put out. Under his direction, the rate at which reports were completed began to increase. Ultimately, twenty-eight publications were issued.

At first, a feeling of cautious optimism prevailed that the AMA would support the work of the Committee. Wilbur had asked the AMA Board of Trustees to suggest medical leaders as members; indeed three of these served on the Executive Committee. They were Walter Bowers, George Follansbee, and Walter Steiner.[14]

Nevertheless, suspicion began to develop among the AMA membership. It came, at least in part, as a reaction to the CCMC publication of Allan Peebles' *A Survey of Statistical Data on Medical Facilities in the United States*. George Follansbee, chairman of the AMA Judicial Council, expressed doubt about the authenticity of the data that Peebles used. At about the same time, Olin West, AMA Secretary and a member of the CCMC, complained that Edward A. Filene, founder of the Twentieth Century Fund, exerted too much influence on the Committee.[15] In addition, the AMA objected to the name of the Committee. They feared that the word "Cost" would be interpreted to mean that fees charged by physicians constituted the only existing problem in medical economics. At the CCMC Executive Committee meeting in May 1930, an agreement was reached to change "Cost" to "Costs." From then on, the group became known as the Committee on the Costs of Medical Care.[16]

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[12] *Final Report*, pp. xvii-xviii.

[13] Falk, Interview.

[14] *Ibid*, Morris Fishbein, *An Autobiography* (Garden City: Doubleday, 1969), p. 189

[15] George E. Follansbee to Wilbur, April 24, 1929; Olin West to Wilbur, June 24, 1929, Wilbur Papers

[16] CCMC, Minutes, May 2, 1930, Wilbur Papers.

Wilbur and Moore had also hoped that local medical societies would support the Committee. Moore constantly sent out informational material to local medical groups as well as to individual physicians. But most of the local groups shared the AMA's growing suspicions. Referring to Moore's promotional efforts, Olin West stated:

> I have sometimes felt that some of the material that has been disseminated by the Committee has come close to bearing the earmarks of pure propaganda looking toward the adoption of predetermined conclusions. I know that this impression has not been mine only because I have had many letters from men in various parts of the country who feel just this way and the same feeling has been expressed in many conversations. Recently I have received a number of letters from officers of medical societies asking for my opinion as to whether or not these societies should comply with a request received from Mr. Moore's office which inquirers seem to regard as having been designed to win the support of the medical societies for a report about the content of which they know nothing whatsoever.[17]

Despite AMA disenchantment, however, the Committee realized as early as December 1931 that the time had come to put together a final report. Both Moore and Wilbur held out hope for a unanimous report, but Falk and many other staff members had grave doubts that a full agreement could be reached.[18] Continued AMA opposition soon proved their skepticism well-founded.

By mid-summer, the form and content of the report were being laboriously thrashed out. The research staff seriously considered a proposal for a compulsory health insurance plan in the form of a model bill which would be included in an appendix.[19] While he was not opposed to the idea, Wilbur realized that such action might lead to more contention among Committee members and bring the report "into a field that is full of difficulties."[20] The proposal was therefore dropped. Despite this concession, West, the AMA Secretary, would not accept the report, declaring that "it would be a waste of time to enter into any discussion about it."[21] By September, no chance existed of a unanimous document. As Davis remarked in a letter to Wilbur: "The forty-eight members are hard to lead and impossible to drive."[22]

Recognizing the need for expert advice on publicity, the Committee employed Edward L. Bernays, a well-known public relations counsel. Bernays provided the press and radio with a barrage of news releases related to the Committee's work, and in October 1932 sent a liaison man to the Midwest to personally contact newspaper editors. Receiving reports that the AMA had already been active in spreading information unfavorable to the Committee, Bernays urged Moore to "organize a physicians' group to back the Committee's report." His advice was not heeded. According to Bernays, the members believed that he "was using political weapons to deal with a non-political matter."[23] This exemplified the Committee's persistent and optimistic belief that a fair presentation of the facts would demolish all opposition.

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[17] West to Wilbur, June 16, 1932, Wilbur Papers

[18] *New York Times*, Dec. 20, 1931; Falk, Interview; Wilbur to C. E. A. Winslow, Jan. 14, 1932, Wilbur Papers.

[19] Moore to Wilbur, July 11, 1932, Wilbur Papers.

[20] Wilbur to Moore, Aug. 13, 1932, Wilbur Papers.

[21] West to Wilbur, Sept. 6, 1932, Wilbur Papers.

[22] Michael M. Davis to Wilbur, Sept. 20, 1932, Wilbur Papers.

During a conference in Washington, D.C. on October 31, the CCMC adopted the final report, which included the majority and all minority reports, and agreed to make a formal presentation at the New York Academy of Medicine the following month.[24] The final report was published by the University of Chicago Press under the title *Medical Care for the American People.*

At ten o'clock in the morning of November 29, 1932, Chairman Wilbur greeted the delegates and guests at the New York Academy of Medicine and launched a series of meetings designed to explain the meaning of the final report. Hope prevailed among the participants that their efforts would mark the beginning of a new era of better and more economical medical care. Although Dr. N. B. Van Etten presented the views of the minority, most of the speakers favored the recommendations of the majority.[25] During his evening address, Wilbur stated that the medical profession was heading toward some form of community organization, and stressed his hope that physicians would lead the way. He went so far as to say that development of community medical centers could not be avoided, "whether physicians liked it or not."[26]

In retrospect, it is hard to see why so much optimism prevailed. The quarrels that led to the forced acceptance of a split report caused it to be vague and conciliatory. Considering the diversity of opinion, however, a split report was no doubt the best that could be achieved.

The first part of the final report was straightforward. It simply pointed out that the American people did not receive adequate medical care. In many regions, an insufficiency of doctors and medical facilities existed. Over forty percent of the 3072 counties in the United States had no hospitals for general use. Even in areas where medical services existed, many of the poor could not afford either medical or dental care, nor could the middle class pay for the cost of major illness. "On the present fee-for-service basis," it stated, "it is impossible for 99 percent of the families to set aside any reasonable sum of money with positive assurance that the sum will purchase all needed medical care."[27]

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[23] Edward L. Bernays, *Biography of an Idea. Memoirs of a Public Relations Counsel* (New York: Simon and Schuster, 1965), pp. 479-480.

[24] *New York Times,* Nov. 1, 1932.

[25] CCMC, Program of meeting at New York Academy of Medicine, Nov. 19, 1932, Wilbur Papers.

[26] *New York Sun,* Nov. 30, 1932; *New York Times,* Nov. 30, 1932.

Yet, the report noted, even though costs were too high, many physicians suffered from an insufficient income. Although specialists had been doing well—they averaged over $10,000 a year—one third of all general practitioners earned less than $2,500 a year. As the depression deepened, incomes of general practitioners, as well as specialists, had begun to decline.[28]

Following this first part came the majority report, the most important and by far the most controversial section of the entire document. The first of its five recommendations called for group practice of physicians and dentists who would join together in hospitals. These hospitals were to become community medical centers that would provide better and more modern services with a minimum of cost. Free choice of physicians would be included.[29]

The second recommendation called for an "extension of all basic public health services." Often, where such services existed, lack of sufficient financing made it difficult to maintain adequate care. Other than stating that additional public health officials would be provided by state and local governments, however, the majority report offered no suggestions as to how or where the added services should be financed.[30]

Establishing group payment for health care was the third proposal. Insurance, financed either by private means, by government, or both, would provide the financial basis. This proposal of the majority report did not specifically endorse a universal compulsory coverage, though eight members of the majority favored compulsory insurance. Some of the others favored a compulsory program for certain types of workers in heavily industrialized states, while several expressed belief that a voluntary scheme would eventually develop into a compulsory insurance system.[31] What proved to be the most controversial part of the report was thus inconclusive in its recommendations. Contract practice, also briefly mentioned in the third recommendation, was bitterly opposed by the AMA. About the only reference the majority members made to that matter was to state that they did not believe contract salaries for physicians would be injurious to the relationship of doctor and patient.[32]

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[27] *Final Report*, pp. 5, 19.

[28] *Ibid.*, pp. 22-26.

[29] *Ibid.*, pp. 109-110.

[30] *Ibid*, p. 118.

The fourth recommendation called for the coordination of local and state medical services, which would be reviewed and evaluated on the local level by committees composed of physicians, dentists, nurses, and pharmaceutical societies.[33] Although little was said about federal aid, this recommendation did call for a national law requiring a full disclosure of ingredients in all medicines and federal licensing of medical products.[34]

The last recommendation stressed the need for improved educational preparation not only of physicians, but also of dental, pharmaceutical, and nursing personnel, and hospital administrators. It pointed out the lack of sufficient social awareness among medical professionals, and urged that medical students receive more education demonstrating the connection between "biological science and the economic, psychological relationships."[35]

These five recommendations were not meant to change radically existing medical institutions.[36] They suggested some new approaches, yet in few instances did they call for federal assistance. The majority as well as the minority of the CCMC members believed that the nation was far too complex for any national plan to succeed.[37] By stressing the differences among the various regions of the nation they reflected, whether intentionally or not, the philosophy of regionalism that was then in vogue with at least some of the intellectuals of that era. CCMC members were concerned with problems of a national scope, but they expected these problems to be solved on local, state, or regional levels.

Considering the bitter controversy that soon developed, it is surprising to discover how much agreement actually existed between the majority and minority reports. The eight members of the first minority group, seven of whom were physicians, had no objection to the second recommendation of the majority report which called for strengthening of public health services; and they also favored the fifth recommendation which pertained to the need for better medical education. They agreed "to some extent" with the fourth recommendation which concerned the coordination of medical services.[38] This meant that the first minority group was closely in harmony with the majority on at least half of the recommendations, a fact rarely stressed by later critics.

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[31] *Ibid.*, pp 120, 130-131.

[32] *Ibid.*, p. 133.

[33] *Ibid.*, pp. 134-135.

[34] *Ibid.*, pp 136-137.

[35] *Ibid.*, pp. 138-139.

[36] *Ibid.*, p. 144.

[37] *Ibid.*, pp. 53-54.

There were, however, significant differences. The first minority group strongly opposed group practice. This, in their opinion, would be an opening wedge for a multitude of problems: commercialization, loss of freedom of action, and the encouragement of contract practice. The group payment idea also drew considerable fire from the minority because they believed that a voluntary insurance program would inevitably lead to a compulsory system.[39] Two members of the first minority group, however, did favor a compulsory health insurance program, and they stated their view in a footnote.[40]

A careful study of the first minority report reveals considerable confusion and apparent contradiction. In the first part of their statement, the minority group condemned voluntary insurance and said that it would be better to have a compulsory system.[41] Later they wrote: "We tried to make it plain that we are not opposed to insurance but only to the abuses and evils that have practically always accompanied insurance medicine." They went on to recommend that "the county society, approved by and under the supervision of the state and societies, is the proper organization to attempt any experiments" in an insurance system. They emphasized that they wanted the medical profession, not "lay corporations," to control any such plan.[42]

Another contradiction among members of the first minority group concerned government participation in medicine. They called for curtailment of medical assistance in all government programs except those relating to public health, the armed services, and veterans, but then proposed federal aid for the care of indigents.[43] Not even the majority report made such a bold proposal.

[38] *Ibid.*, pp. 152-153.
[39] *Ibid.*, pp. 163-167.
[40] *Ibid.*, p. 168.
[41] *Ibid.*, p. 164.
[42] *Ibid*., pp. 179-181.
[43] *Ibid.*, pp. 170-172.

The first minority group recognized the need for change, and did make recommendations at one point for a medical-payment scheme controlled by the profession and for government-financed care for the poor. Yet they could not go along with the ideas of group practice or contracted salaries for physicians, and they believed that their ideas on insurance were far different from the recommendations of the majority.

The second minority report, written by two dentists, Dr. Herbert E. Phillips and Dr. C. E. Rudolph, generally favored the majority's plan for group practice and group payment, but labeled the idea of community medical centers a "Utopian concept." Their disagreement with the majority largely centered upon their belief that the CCMC had not made an adequate study of the problems of dental group practice; they also rebuked the majority for not favoring a compulsory health insurance plan.[44]

The personal statement of Walton H. Hamilton followed the second minority report. Hamilton, a professor of law at Yale, complained that the CCMC had not come to grips with the main problem: the need for a compulsory health insurance program. He did not outline such a plan, but suggested that one could be worked out on a local and state basis.[45]

Edgar Sydenstricker, a former statistician for the United States Public Health Service who had become a strong supporter for a national health insurance system, would not sign either the majority or any of the minority reports. In a short, one paragraph statement, he simply said that "the recommendations do not, in my opinion, deal adequately with the fundamental economic question."[46]

The disagreements between the majority and minority reports could not be reconciled and indeed became magnified beyond reason. Yet, even after it became apparent that no unanimous report could be reached, many still hoped that publication of the facts and recommendations in *Medical Care for the American People* would result in sane and rational debate. Instead, an emotional storm of controversy quickly erupted.

Not surprisingly, the attack was spearheaded by the AMA. Morris Fishbein, editor of the *Journal of the American Medical Association,* wasted no time. In an editorial which appeared in the December 3 issue of *JAMA,* Fishbein let loose with a bitter verbal barrage against the majority report.[47] The promptness of the attack made Bernays believe that Fishbein had engaged in "a hatchet job." Fishbein called it "an act in keeping with the best of American journalism."[48]

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[44] *Ibid.,* pp. 184-188.

[45] *Ibid.,* pp. 196, 198.

[46] *Ibid.,* p. 201.

[47] "Editorials," *JAMA,* Dec. 3, 1932, *99,* 1950-1952.

According to Fishbein, Moore had already set the tone of the report in his 1927 book, *American Medicine and the People's Health,* by advocating "his personal bias for insurance schemes, and indeed for government practice."[49] Actually, Moore had merely expressed the need for a thorough study of the conditions of the nation's health care, and to a great extent the CCMC was a fulfillment of that request. Nevertheless, the AMA editor believed that the report reflected Moore's alleged radical views. In the same editorial, Fishbein went so far as to declare that Edward Filene "was chiefly responsible for establishing the Committee on the Costs of Medical Care and in developing funds for its promotion." The recommendation for group practice, which Fishbein referred to as "medical soviets," was, in his opinion, "one of the pet schemes of E. A. Filene."[50]

The influential Fishbein gave his own interpretations as to what the various reports said. Although both the majority and first minority reports favored the upgrading of the general practitioner and the right of patients to select their own doctors, he nevertheless declared: "the minority bluntly recommends that 'united attempts' be made to restore the general practitioner to the central place in medical practice." He failed to note that the majority had advocated virtually the same position.[51] And he said little about the agreements among the reports, or the minority endorsement of a health insurance plan free of "lay control."

AMA support subsequently went to the first minority report. What transpired, however, was the use of the minority report to defend the status quo in medical care. Institutions, whether medical or not, often recoil at the mere suggestion of change, especially if it comes from outside. The attack on the report, spearheaded by the AMA, was an excellent example of this reaction.

But the AMA was not alone in its criticism. Newspapers and journals generally spoke out against the majority report. The *Wall Street Journal* ran a headline that said: "Part Socialization of Medicine Urged." The *New York Herald-Tribune* declared: "Medical Cost Report Urges Socialization." The *New York Times* stated: "Socialized Medicine is Urged in Survey." The *Washington Star* said the majority recommended

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[48] Bernays, *Biography of an Idea,* p. 482, Fishbein, *An Autobiography,* p. 193.

[49] "Editorials," *JAMA*, Dec. 3, 1932, *99:* 1950.

[50] *Ibid.* This statement possibly reflected an earlier opinion of Olin West's.

[51] *Ibid* , 1950-1952.

"socializing medical care."[52] And an editorial in the *Illinois Medical Journal* claimed that "ninety percent of the lay press sided with physicians in supporting the minority report."[53] This may not have been much of an exaggeration, for little evidence exists revealing support for the majority among newspaper editors.

A few state journals attempted to be more objective. The *New England Journal of Medicine,* edited by Dr. Walter P. Bowers, one of the signers of the majority report, said that the Committee had "done its work thoroughly" and that the "final report should be studiously considered."[54] The *Pennsylvania Medical Journal* gave a long and unbiased account of the majority and minority recommendations, but chided the members for not coming out in favor of a compulsory health insurance program.[55]

Throughout the winter of 1932-1933, local medical societies debated the final report. An avalanche of letters to Committee members from various individuals and groups expressed, for the most part, support of the minority recommendations. An official of the county medical society in Oklahoma City called the majority report "revolutionary and too far advanced."[56] The St. Louis medical society claimed that the majority report was "a cup of gall, an incitement to revolution."[57] At the annual meeting of the Medical and Chirurgical Faculty of Maryland, Dr. G. Milton Linthicum called it "a hydra-headed monster" which would put his profession "in medical soup kitchens."[58] The New York State Medical Society criticized the Committee's recommendation for group practice and insurance and said it was based on "opinion rather than fact."[59]

Fishbein made personal visits to many local meetings. In early January 1933, for example, he spoke to a group at the Mount Sinai Hospital in New York, declaring that the publicity had been too favorable to the majority report.[60] Actually, the supporters of the majority, lacking organization or agreement on what should be done, were no match for the determined editor.[61]

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[52] *Wall Street Journal,* Nov. 30, 1932; *New York Herald Tribune,* Nov. 30, 1932; *New York Times,* Nov. 30, 1932; *Washington Star* quotation taken from *JAMA,* Dec. 10, 1932, *99:* 2037.

[53] [Editorial], *Ill. Med J*, 1933, *63* 2.

[54] [Editorial], *New England J. Med*, 1932, *207.* 1162.

[55] [Editorial], *Penn. Med. J.,* 1933, *33*· 904.

[56] Burt F. Keltz to Moore, Feb. 3, 1933, Michael M. Davis Papers, New York Academy of Medicine (Davis Papers).

[57] St. Louis Medical Society, Resolution adopted Jan. 17, 1933, Wilbur Papers.

[58] *Baltimore Sun,* April 27, 1933.

[59] *New York Times,* April 4, 1933.

[60] *Ibid.,* Jan. 8, 1933.

Of course the majority report had its defenders. Filene spoke in its support before the Connecticut Medical Society.[62] At about the same time, the Hartford Medical Society heard a debate between two members of the CCMC: Dr. Walter Steiner, who signed the majority report, and Dr. N. B. Van Etten, a signer of the first minority. An observer who attended both of these meetings believed that a vast majority of those present favored the minority position.[63] A Philadelphia physician, who supported the majority, wrote a letter to Wilbur expressing disappointment over the negative attitude of his local medical society.[64]

An experience of Dr. C. C. Lochead, a medical practitioner in Rochester, Minnesota but not a member of the staff of the famed Mayo Clinic, exemplifies further the frustrations of the majority report's supporters. Lochead attended a meeting of the county medical society at which the final report was presented. In a letter to Alden Mills, Executive Secretary of the CCMC Administrative Staff, he reported that Dr. William J. Mayo, one of the founders of the Mayo Clinic, informed the group of "his intentions to follow the AMA." As a result of Mayo's statement, no discussion followed. "You will maybe recognize the fact," Lochead pointed out, "that what your majority report recommends is practically the Mayo system."[65] He speculated that the Clinic did not want to offend the AMA.

Lochead, who had no association with the CCMC, was by no means the only one to be puzzled or frustrated. Organized support by CCMC members failed to materialize effectively, even after the establishment of a group called the American Committee on Medical Costs, headed by Morris L. Cooke, Director of the Germantown Hospital in Pennsylvania and a member of the CCMC. This new group was supposed to continue the support of the majority's recommendations and Cooke announced: "If anybody is looking for a fight he is going to get it."[66] Shortly thereafter, Dr. Winslow wrote to Wilbur:

> I see by the morning paper that the fight is on and I think that Morris Cooke

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[61] Louis S. Reed, Interview conducted by Forrest A. Walker, Washington, D.C. June 9, 1971 in possession of author. F. Stanley Howe to Davis, Dec. 5, 1932, Davis Papers.

[62] James Raglan Miller to Davis, March 17, 1933, Davis Papers

[63] *Ibid.*

[64] Charles H. Frazer to Wilbur, Jan. 27, 1933 Wilbur Papers.

[65] C. C. Lochead to Alden V. Mills, Jan. 31, 1933, Wilbur Papers.

[66] *New York Times*, Dec. 1, 1933.

> should be able to hold his own against Fishbein. I am not at all disturbed about the controversy or about the immediate popular reaction to it.[67]

Winslow should have been "disturbed," however, because nothing came of the American Committee on Medical Costs. No organization volunteered to finance it, not even any of the eight foundations that had supported the CCMC.[68] With the nation in the grips of the depression, all efforts to raise funds failed.[69]

The depression not only dried up all potential sources of money, it also helped to change the attitudes of many CCMC supporters. In the 1920s, persons with a deep concern about social problems had a great deal of faith in the beneficial value of surveys and studies. Just finding out the nature and extent of a problem would, they thought, aid in its solution. The onslaught of the depression changed their minds. Studies of conditions and traditional reliance upon local help would no longer suffice, they realized; government assistance, particularly federal aid, was now needed. Many concerned experts in the field of medical care thus turned to the idea of compulsory insurance, an issue that continued to grow after the publication of the final report.[70] Not all agreed, of course, and this led to further confusion, but many of the supporters of the majority were no longer so enthusiastic about its rather weak and contradictory recommendations. Unfortunately for the CCMC, *Medical Care for the American People* got caught in the problems related to changing values.

For these reasons, many of the supporters of the majority statement hesitated to come to its defense. Louis Reed, a member of the research staff, confessed his disappointment in the final report, saying that its recommendations fell short of what the situation demanded.[71] Some of the staff and Committee members soon became associated with other organizations that had come out more boldly for national health insurance. Sydenstricker and Falk became staff members of the Milbank Fund. Davis again became associated with the Julius Rosenwald Fund. By 1934, these two foundations, as well as the Twentieth Century Fund, were active in the national health insurance movement.[72]

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[67] Winslow to Wilbur, Dec. 1, 1933, Wilbur Papers

[68] Falk, Interview.

[69] James Rorty, *American Medicine Mobilizes* (New York: W W. Norton, 1939), p. 200.

[70] Judith Walzer Leavitt and Ronald L. Numbers, eds., *Sickness and Health in America* (Madison. University of Wisconsin Press, 1978), pp 142-143.

[71] Reed, Interview.

[72] Rorty, *American Medicine Mobilizes*, p. 78.

Sydenstricker also became active as a member of the Medical Advisory Committee which worked on health care recommendations for President Roosevelt's Committee on Economic Security, which in turn worked out the President's recommendations to Congress for the 1935 Social Security Bill. Sydenstricker, aided by Falk who served as a staff assistant, pushed hard to get health insurance included in the proposals to the President and it was later added despite strong AMA opposition. Roosevelt, however, omitted it in his recommendation to Congress, choosing not to jeopardize the entire Bill by burdening it with a proposal that was vehemently opposed by the medical profession and had moreover received very little journalistic or public support.[73] Politicians, whether local officials or the President of the United States, are reluctant to lead a fight for any movement that seems lacking in popularity.

Despite its failure to win popular support, the final report did bring about a change in the climate of opinion during its era. Even though a medical insurance program was not included in the Social Security Act of 1935, Title VI of that act provided federal grants to the states for public health service programs.[74] This was the essence of the second recommendation of the majority report.

An important development that occurred in the period following the publication of the final report was the movement for voluntary group prepayment of hospital costs, which in 1937 became known as the Blue Cross program. C. Rufus Rorem, a former member of the Research Staff of the CCMC, was appointed to set up new pre-payment hospitalization plans. With money from the Rosenwald Fund, one of the foundations that had given financial support to the CCMC, the Blue Cross Plan was established.[75]

The debate concerning national health care continued during the decade of the 1930s. The interdepartmental Committee for the Coordination of Health and Welfare Activities considered the question of the national health insurance program, as did the 1938 National Health Conference, but both groups failed to arouse sufficient political support to get their plans enacted. The Wagner Health Bill of 1939 was the first of several ill-fated attempts to get Congressional action that would provide for a national health insurance program.[76] During the 1940s and 1950s, further efforts to get national health insurance legislation likewise failed. Nevertheless, changes in the health care field were slowly taking place. Federal programs for the construction of hospitals and other medical facilities, and financial aid for medical research and education have become realities.

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[73] Edwin E. Witte, *The Development of the Social Security Act* (Madison University of Wisconsin Press, 1962), pp. 172, 188.

[74] I. S Falk, "The Committee on the Cost of Medical Care—25 years of progress," *Amer. J Public Health*, 1958, *48:* 982.

[75] Daniel S. Hirshfield, *The Lost Reform. The Campaign for Compulsory Health Insurance in the United States from 1932 to 1943* (Cambridge: Harvard University Press, 1970), pp. 92-99.

None of the recommendations of the final report had called for direct federal help in any of these programs, but the idea and the spirit of new approaches can be traced back to the efforts of the CCMC. Although vague and confusing, the final report did help draw attention to the crucial problems of health care.

In 1970, the Department of Health, Education, and Welfare republished the entire final report. Anyone reading *Medical Care for the American People* today would find it hard to view the work as radical. Obviously the debate that occurred over forty-five years ago was not a struggle between "Americanism and sovietism," but instead represented the beginning of a transition in thought regarding ways to improve and extend health care. The vigorous opposition of the AMA and most local medical societies was strong evidence of their resistance toward changing the status quo, but even this vehement opposition did not stifle continued debate. The questions raised by the Committee remain with us today.

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[76] *Ibid.*, p. 117.

EPIDEMICS AND MEDICINE: THE INFLUENCE OF DISEASE ON MEDICAL THOUGHT AND PRACTICE*

GUENTER B. RISSE

Historians have generally viewed medical ideas and interventions as organized responses designed to contain, conquer, and even eradicate disease. Such concepts and actions are seen as expressions of prevailing intellectual and social factors not necessarily linked to the biological conditions responsible for disease. Medicine has influenced and continues to influence diseases in a variety of ways. Have changing disease patterns equally influenced medicine?

The intellectual history of medicine has been traditionally an important component of medical historiography.[1] A study of the development of ideas about health and disease, their relation to each other in time, diffusion, and effect on historical events has for a long time been the backbone of medical history. Historians and physicians, especially the latter, are interested in elucidating medicine's professional continuity and marshalling the aid of the past for present theories and procedures. The perspective acquired through such an approach provides a sense of expansion or "growth" of medicine.[2]

Yet, in concentrating on the genesis or reception of ideas, medical history must take into consideration the climate of opinion or "Zeitgeist" of particular historical periods. Analysis of the cause and effects of intellectual change demands consideration of the social context in which these processes take place.[3] Ideas should no longer be examined in isolation but rather in relation to an environment that includes social, cultural and biological components. Viewing medical history and especially medical theories against the backdrop of changing forms of disease is not a novel

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[1] For a detailed analysis see O. Temkin, "Historiography of ideas in medicine," in *Modern Methods in the History of Medicine*, ed. by E. Clarke (London: Athlone Press, 1971), pp. 1-21

[2] An example is Lester S. King, *The Growth of Medical Thought* (Chicago: Univ. of Chicago Press, 1963).

[3] A useful summary of these issues is contained in F. L. Baumer, "Intellectual history and its problems," *J. Modern Hist.*, 1949, *21* 191-203.

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approach. As early as 1933 Henry E. Sigerist declared that the history of disease was the starting point of all investigations; it was impossible to understand a physician's behavior at the sickbed without knowing about the diseases being treated.[4]

Sigerist was even more explicit in his book *A History of Medicine* (1951). "The medical historian consulting the past," he wrote, "will first endeavor to find out what health conditions were in a given society at a given time."[5] His views were echoed as recently as 1963, by Owsei Temkin, who declared that our thinking about disease is not only influenced by a series of internal and external factors, but likewise determined by the biological circumstances in which we find ourselves.[6]

In spite of these clear pronouncements, few medical historians have attempted to analyze in detail possible links between disease conditions and medical thought and practice. Surprisingly, this situation persists in spite of the ever-widening perspective in which past medical activities are being placed by historians.[7] One reason for the apparent neglect appears to be the historian's preference for social issues and lack of basic knowledge concerning the clinical, pathological, and epidemiological aspects of disease.[8] Historians with medical backgrounds, on the other hand, often tend to ignore such biological aspects, preferring instead to scrutinize biographical and institutional questions. Even Sigerist's primary interest remained the study of societal conditions promoting disease rather than the influence of disease on medical activities.

Such a development is not surprising. Disease is not a "natural" phenomenon striking man and influencing history according to some immutable laws.[9] The waxing and waning of epidemics in historical times point out probable fluctuations in disease exposure and susceptibility. Such varied biological phenomena as bacterial mutations, human immunity, and the ecology of disease vectors also play important roles. Moreover, epidemiological patterns are not autonomous but intimately linked to political, socio-economic and cultural factors. As George Rosen reiterated years ago, "man is also a social organism capable of creating a social environment which he interposes between himself and nature."[10]

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[4] Henry E. Sigerist, "Problems of historical-geographical pathology," *Bull Inst Hist. Med.* 1933, *1:* 11-12.

[5] Henry E. Sigerist, *A History of Medicine*, 2 vols (New York, Oxford Univ. Press, 1951), Vol 1, "Introduction," p 8 and p. 73.

[6] O. Temkin, "The scientific approach to disease: specific entity and individual sickness," in *Scientific Change*, ed. A. C. Crombie (New York. Basic Books, 1963), pp. 629-647.

[7] Henry E. Sigerist, "The social history of medicine", *Western J. of Surg. Obst. and Gynecol* , 1941, *42:* 715-722, reprinted in *Henry E Sigerist on the History of Medicine*, ed. F Martí-Ibáñez (New York. MD Publ., 1960), pp 25-33, R. H. Shryock, "The interplay of social and internal factors in modern medicine: an historical analysis," *Centaurus*, 1953, *3* 107-125

[8] Recent calls for further studies were issued by G. N. Grob, "The social history of medicine and disease in America: problems and possibilities," *J. Social Hist.*, 1977, *10:* 392-409, See also P. Slack, "Disease and the social historian," *Times Lit. Suppl.*, March 8, 1974, 23-24

[9] For example, Fernand Braudel's belief in the autonomy of diseases is expressed in *Capitalism and Material Life, 1400-1800*, Transl. by M. Kochan (New York: Harper and Row, 1975), p. 51.

Throughout history, man's travels and activities created new ecological settings in which certain diseases would assume epidemic proportions. Nutrition, clothing, housing, occupation and way of life provided opportunities for propagation of specific illnesses. Man-made conditions—including the turmoils of war, the squalor of crowded cities, the rigors of sea travel, and the depredations of famines, all influenced the appearance and impact of disease. Thus, the "natural" evolution of disease has been decisively influenced by such human factors as population, density, agricultural productivity, and communications.[11]

The complexity of relationships involving humans, their societies and disease-causing agents is further enhanced by the social definition of sickness. Historically, man has selected from a variety of events those he will label aberrant enough to call diseases. Phenomena of variable disability and dysfunction are sanctioned by society as warranting a deviant status.[12] Thus, disease is as frequently open to cultural as well as biological variability, defined to a great extent by social judgments based on particular sets of values. In fact, a recent study attempts to show that historically certain diseases were convenient social constructions elaborated by middle-class physicians in a capitalist society.[13] Whatever the particular constellation of causative elements, human, environmental, or biological, disease has been an inevitable companion to be reckoned with in every society, shaping and shaped by events, an important context for the examination of healing activities.

In recent years the history of disease has become an attractive subject

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[10] G. Rosen, "The biological element in human history," *Med. Hist.*, 1957, *1*. 159.

[11] A modern book dealing with the subject is William H. McNeill, *Plagues and Peoples* (Garden City, N.Y.: Anchor Press, 1976)

[12] For a useful discussion of this issue see Lester S. King, "What is disease?" *Phil. of Sci.*, 1954, *21:* 193-302, and H. T Engelhardt, Jr., "The concepts of health and disease," in *Evaluation and Explanation in Biomedical Sciences*, ed. by H. T. Engelhardt Jr. and S. F. Spicker (Dordrecht, Holland: Reidel, 1974), pp. 125-141.

[13] See a recent paper by K. Figlio, "Chlorosis and chronic disease in nineteenth-century Britain: the social constitution of somatic illness in a capitalist society," *Social Hist.*, 1978, *3:* 167-197.

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for research in various disciplines. To explain the size and composition of historical populations, demographers study the disease patterns responsible for mortality and even fertility rates.[14] Authors such as Thomas McKeown and Peter Razzell argue about the impact of smallpox on population growth.[15] Economic historians are increasingly interested in the effects of nutrition and famine on disease, epidemics, and mortality. Grain and bread prices as indexes of subsistence conditions are correlated with bills of mortality.[16] The effects of epidemics on governmental responses including food relief and public health measures has been analyzed in detail for certain historical periods.[17]

Finally, epidemiologists using recent Third World data, study the synergism between malnutrition and infection in past societies.[18] In turn, historical geographers examine the effects of climatic change on the ecology of disease.[19] Last but not least, general historians have expressed an interest in the impact of diseases on historical events, assigning them crucial roles in the conquest and fall of civilizations.[20]

Glimpses of possible connections between diseases, medical theories, and therapeutics have been provided by Erwin H. Ackerknecht, a student of Sigerist. In his monograph on nineteenth-century malaria in the Upper Mississippi Valley, he focused on a specific disease and analyzed its general impact on society, including the medical profession.[21] In a subsequent paper dealing with anticontagionist ideas prevalent in the nineteenth century, Ackerknecht indicated that the epidemiological and

[14] See for example, "Medicine and industrialization in history," Symposium 4, *Human Implications of Scientific Advance*, ed by E. G Forbes, Proceedings XVth International Congress of the History of Science (Edinburgh: Edinburgh University Press, 1978), pp. 197-250.

[15] T. McKeown, "An interpretation of the modern rise of population in Europe," *Population Studies*, 1972, *26*: 345-382; and its critique by P. Razzell in *Population Studies*, 1974, *28*: 5-17.

[16] A. B. Appleby, "Nutrition and disease: the case of London, 1550-1750," *J. Interdisciplinary Hist.*, 1975, *6*: 1-22, and by the same author "Disease or famine? Mortality in Cumberland and Westmoreland, 1580-1640," *Econ Hist Rev.*, 1973, *26*: 403-432.

[17] J. D. Post, "Famine, mortality, and epidemic in the process of modernization," *Econ. Hist Rev*, 1976, *29*: 14-37. This article has been expanded into a book, *The Last Great Subsistence Crisis in the Western World* (Baltimore: Johns Hopkins Press, 1977). See especially chapter IV, "Demographic aspects and the role of epidemic disease," pp. 108-140

[18] C. L. Marshall, "Health, nutrition, and the roots of world population growth," *Inter J. Health Serv.*, 1974, *4*, No. 4: 677-690.

[19] G. M. Howe, *Man, Environment, and Disease in Britain* (New York: Barnes and Noble, 1972)

[20] Among them is McNeill's previously cited book and Alfred W. Crosby, Jr., *The Columbian Exchange* (Westport, Conn.: Greenwood, 1972).

[21] E. H. Ackerknecht, "Malaria in the Upper Mississippi Valley, 1760-1900," *Supplements to the Bull. Hist. Med.* No. 4. (Baltimore, Johns Hopkins Press, 1945).

clinical characteristics of plague, yellow fever, and especially cholera, favored the development of environmental views concerning their origins.[22]

In his analysis of the various cholera epidemics that afflicted nineteenth-century America, Charles Rosenberg, a disciple of Ackerknecht, devoted chapters to the impact of this disease on the medical profession, especially on its theories, its use of heroic therapeutics, and the public health measures advocated. His study is a thoughtful and explicit analysis of the relationships between biological phenomena and medical activities. Like Ackerknecht, Rosenberg pointed out that the clinical characteristics of cholera discouraged contagionist views on the cause of the disease.[23]

The following discussion is an example of the influence exerted by disease on medical thought and practice. The greatly summarized case study is intended to show how disease manifestations, as perceived by physicians, helped shape certain theoretical views and favored specific therapeutical strategies.

In a paper delivered February 4, 1774, before the American Philosophical Society, Benjamin Rush concluded that:

> The success of nature in curing the simple diseases of Saxony laid the foundation for the anima medica of Doctor Stahl. The endemics of Holland led Doctor Boerhaave to seek for the causes of all diseases in the fluids. And the universal prevalence of diseases of the nerves, in Great Britain, led Doctor Cullen to discover their peculiar laws, and to found a system upon them.[24]

This was not the only time Rush was to link disease conditions with prevalent medical ideas and practice. In his introductory lecture to a course on medical theory at the College of Philadelphia in 1789, Rush connected Boerhaave's idea of a "lentor" in the blood with Holland's high incidence of skin disease, while Cullen's pathology of solids was related to new British diseases of luxury and indolence such as gout.[25] Rush repeatedly returned to the theme in other publications. He noted that in 1790, he had established some new principles in medicine suggested by the peculiar diseases afflicting the United States.[26] "Perhaps no system of medicine can be perfect while there exists a single disease which we do not know, or cannot cure. If this be true, then a complete system of medicine cannot be formed till America has furnished descriptions and cures of all her peculiar diseases," Rush declared.[27]

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[22] E. H. Ackerknecht, "Anticontagionism between 1821 and 1867," *Bull Hist. Med*, 1948, *22*: 569.

[23] Charles E. Rosenberg, *The Cholera Years, the United States in 1832, 1849 and 1866* (Chicago· Univ. of Chicago Press, 1962), especially chapters 4 and 9, pp. 65-81 and 151-172

[24] Benjamin Rush, "An inquiry into the natural history of medicine among the Indians of North America," *Medical Inquiries and Observations*, 4 vols. (Philadelphia: Carey, 1815), vol. 1, pp. 78-79.

[25] Benjamin Rush, "Introductory lecture to a course of lectures on the theory and practice of physic," delivered in the College of Philadelphia before the students and trustees of the College, November 2nd, 1789, pp. 27-28, Manuscript Collection, The Historical Society of Pennsylvania.

Rush repeatedly urged his students to study the diseases of the country in which they planned to practice, stressing the decisive role of local climate, diet, and living habits in shaping illness.[28] He and other physicians contended that European classifications of disease engendered confusion when applied to the ailments afflicting Americans.[29] For this and other reasons, Rush opposed all nosologies, claiming that they retarded medical progress. He insisted that diseases changed markedly in time and space, thereby rendering all classification systems obsolete.[30] Thus, Rush's theoretical formulations and therapeutics were decisively influenced by his view of distinct "American" disease patterns. It was necessary to contrast the nature of ailments prevalent on this side of the Atlantic with those of Europe, especially Britain, since many American practitioners had received medical training in the Old World.

Rush's arrival for a course of studies in Edinburgh towards the end of 1766 brought him face to face with patients suffering from a "putrid fever constitution" then prevailing in Great Britain.[31] Following the classification of John Huxham, first published in 1739, physicians distinguished two principal types of continuous fevers: "*inflammatory*" and "*low nervous.*" Inflammatory fevers were for the most part associated with acute respiratory, intestinal or cutaneous symptoms. They appeared rather suddenly with chills, high temperature, rapid and strong pulse, labored breathing, and general toxicity reflecting the vehemence of the bodily response. By contrast, "low nervous fevers" elicited a much more gradual and attenuated systemic reaction with moderate increases in temperature, weak and quick pulse, great prostration, and a host of neurological symptoms: headaches, restlessness, and drowsiness often followed by twitching of limbs, delirium and even coma.[32] Among such low nervous fever types were the so-called "putrid fevers," in which a tendency for bodily corruption prompted the discharge of pungent sputum, vomitus, stool, urine, and sweat.

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[26] Benjamin Rush, "An inquiry into the comparative state of medicine, in Philadelphia, between the years 1760 and 1766, and the year 1809," in *Medical Inquiries and Observations*, (1815), vol. 4, p. 240.

[27] Benjamin Rush, *An Eulogium in Honor of the Late Dr. William Cullen* (Philadelphia: Dobson, 1790), pp. 28-29.

[28] Benjamin Rush, "On the necessary connection between observation and reasoning in medicine," delivered Nov. 7th, 1791, *Six Introductory Lectures* (Philadelphia: Bradford & Inskeep, 1811), p. 2.

[29] Samuel Clark Oliver, *An Essay on the Causes Which Prevent the Progress and Usefulness of Medical Science* (Philadelphia: 1820), pp. 5-6.

[30] Benjamin Rush, "On the causes which have retarded the progress of medicine," *Six Introductory Lectures*, pp. 144-145.

[31] Charles Creighton, *A History of Epidemics in Britain*, 2nd ed., 2 vols., (1894), reprinted with additional material by D. E. C. Eversley, E. A. Underwood and L. Ovenall (New York: Barnes and Noble, 1965), vol. 2, p. 120.

Huxham's humoral theory of disease faithfully guided his therapeutic approach to these different types of fever. In "inflammatory fevers," Huxham concluded that "the method of cure is very obvious, which is by lessening the velocity, quantity, and acrimony of the blood as soon as possible."[33] Thus, bloodletting was the best approach guided by the strength of the patient and the intensity of the symptoms. Bleeding was supplemented with purges as well as the administration of cooling and blood-diluting vegetable juices.

The "slow nervous fevers" were treated quite differently. "From the history of the slow nervous fever," wrote Huxham, "I think it is very evident that no great evacuations are proper, especially bleeding."[34] Instead, the approach was conservative, consisting in the administration of mild laxatives and diaphoretics, together with a supportive diet that included fruit juices and wine.

Huxham's basic fever types were subsequently recast by William Cullen under the terms *synocha* and *typhus*. "This distinction," Cullen affirmed, "is the same with that of fevers into the Inflammatory and Nervous, the distinction at present most generally received in Britain."[35] Synocha was the inflammatory species affecting robust people. Red face, throbbing and full pulse, accompanied by few sensory disturbances, characterized synocha. The onset was sudden, bodily reactions severe. Breathing was labored, gastrointestinal complaints frequent. The genus "typhus," in turn, represented a type of fever preceded by bodily weakness, "very commonly arising from contagion or effluvia."[36]

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[32] A good summary of eighteenth-century fever classifications is Lester S. King, "Of fevers," in *The Medical World of the Eighteenth Century* (Chicago: Univ. of Chicago Press, 1958), chapter 5, pp. 123-155

[33] John Huxham, *An Essay on Fevers*, 3rd ed. (London: Hinton, 1757), p. 5.

[34] *Ibid.*, p. 81

[35] William Cullen, "Of the difference of fevers, and its causes," in *First Lines of the Practice of Physic*, (1784 edition), *The Works of William Cullen, M.D.*, ed. by J. Thomson, 2 vols. (Edinburgh: Blackwood, 1827), vol. 1, p. 517.

[36] *Ibid.*, p. 520.

Cullen stressed the insidious onset of this low grade fever, the headaches, and gradual appearance of delirium or "typhomania." He distinguished two categories: *typhus gravior* or "putrid fever," and *typhus mitior* or "slow nervous fever."[37] Typhus was attributed to an extreme debility of the nervous system caused by insufficient food, damp foul air, or idle living. No wonder Rush connected the prevalence of "nervous fevers" with the rise of medical ideas proclaiming the central position of the neuromuscular system in pathogenesis!

Synocha fevers displaying an excessive irritability of the cardiovascular system were treated with bleeding and purging to moderate the febrile reaction of the organism. "Typhus," on the other hand, called for a supportive therapy using tonics such as the Peruvian bark, wine, cold water and acidulated drinks to restore vigor.[38] Referring specifically to "typhus," one physician declared that "I have not had the least scruple of prescribing wine liberally in fevers of a low kind or putrid tendency. . . . It was a practice that was inculcated in the schools of physic at Edinburgh as long ago as the year 1768, and probably before that period."[39] In general, blood-letting was poorly tolerated by patients suffering from "typhus," especially when carried out repeatedly and in large amounts.[40]

Another disease ostensibly arising out of "high debility" was influenza. Epidemics afflicted much of Scotland, including Edinburgh, in 1758 and 1762.[41] John Herdman, a fellow of the Royal College of Surgeons of Edinburgh, writing in 1803, referred to the universality of influenza in Britain.[42] The fever was viewed as a disease of derangement or debility, manifested by feelings of universal lassitude. Thus, bleeding and other antiphlogistic evacuations were not only superfluous and unnecessary, they were wrong. "If you would consider its symptoms in a just and proper point of view, you would find that this method of cure, this evacuatory and antiphlogistic practice, is supported on no good ground whatever; you would draw the lancet with the utmost hesitation, and having done the deed, you would sheath it in fear and trembling," Herdman declared.[43] The proper treatment for influenza, therefore, was stimulants, including warm wine, opium, local heat, and cordial drinks.

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[37] William Cullen, "Synopsis Nosologiae Methodicae," in *The Works of William Cullen, M D* , vol. 1, pp. 255-57.

[38] *The Edinburgh Practice of Physic and Surgery* (London: G. Kearsley, 1800), pp. 113-115.

[39] David Campbell, *Observation on the Typhus of Low Contagious Fever* (Lancaster: Walmsley, 1785), p. 69.

[40] See Creighton, *A History of Epidemics in Britain*, vol. 2, p. 122-123, where the author refers to Fothergill's reports on diseases in London between 1751-55, published in the *Gentlemen's Magazine*

[41] *Ibid.*, vol. 2, pp 352-358.

[42] John Herdman, *A Plain Discourse on the Causes, Symptoms, Nature and Cure of the Prevailing Epidemical Disease Termed Influenza* (Edinburgh: Manners & Miller, 1803), p. 3.

Faced with such clinical evidence, British physicians felt that a shift in disease patterns had occurred. In his 1770 review of prevailing diseases in Great Britain, John Millar, remarked that "I am now firmly convinced, from the careful attention to diseases, during the course of an extensive practice, that inflammatory disorders are extremely rare, and that there are very few fevers, in this country, in which the antiphlogistic method of cure can be used with safety."[44]

Millar's clinical impressions were echoed by other practitioners. Francis Home, a distinguished member of the University of Edinburgh, wrote: "Inflammatory diseases, in general, have much diminished, and those of an opposite nature have much increased, in the present age. The former, described so often by Sydenham, are hardly to be met with at present in London. In Edinburgh, a pure synocha is seldom seen, even among the commonality. The low fever, or *typhus nervosus,* is by much the most frequent amongst them."[45] This view was analyzed further by an Edinburgh graduate, James Hutchinson, in his 1782 doctoral dissertation.[46] Changes in the nature of fevers occurring in Britain since the time of Sydenham were profound, Hutchinson claimed, and the more attenuated febrile reactions of the "typhus" type reflected debilitated organisms possibly due to a progressive softening of manners.[47]

From the extant clinical descriptions it can be assumed that the fever category "typhus" probably corresponded to severe and mild cases of typhus and typhoid fever, not yet recognized as separate disease entities. Their gradual prominence and frequency was a direct result of conditions associated with the early Industrial Revolution.[48] In Scotland, such particular disease patterns favored the establishment of a medical theory and therapeutics predicated on the assumption that most diseases originated from debilitated or "asthenic" bodily constitutions. The new system, proposed by a disciple of William Cullen, John Brown, regarded

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[43] *Ibid.*, pp. 28-31, and p. 47.

[44] John Millar, *Observations on the Prevailing Diseases in Great Britain* (London: Cadell, 1770), p. 13.

[45] Francis Home, *Clinical Experiments, Histories and Dissections*, 2nd ed. (Edinburgh, 1782), pp. 13-14.

[46] James Hutchinson, *De Mutatione Febrium e Tempore Sydenhami* (Edinburgh, 1782).

[47] See also quotation in Creighton, *A History of Epidemics in Britain*, vol. 2, p. 3.

[48] For a description of typhus affecting a late eighteenth-century cottonmill see the anonymous article "The putrid fever at Robert Peel's Radcliffe mill," in *Notes and Queries*, 1958, *203*. 26-35.

"typhus," or jail, putrid, or petechial fever as a disease of debility. Stimulant or "anti-asthenic" remedies were the treatments of choice.[49]

Epidemiological conditions in late eighteenth-century Britain, however, differed markedly from those existing in America. After his return from Europe in 1769, Rush adopted a theory of fevers which postulated that all febrile illnesses were due to excessive bodily excitability, especially in the blood vessels.[50] This view seems to have been prompted by his clinical observations on this side of the Atlantic. It is tempting to hypothesize that such increased systemic reactions accompanying febrile diseases reflected in part their relative newness in a growing population composed of immigrants. America became the repository of diseases hitherto prevalent in various European regions; a melting pot for settlers with particular sets of immunological resistance and susceptibility to disease flowing through their bloodstreams. Thus, the new ecological relationships and a more vulnerable population may have accounted for the contemporary medical perceptions: the clinical manifestations of many diseases in America differed from those observed in Europe.

In the case of the "bilious North American" yellow fever of 1793, the miasmatic exhalations of Philadelphia allegedly triggered an especially violent organic response characterized by high temperature, a fast, full pulse, and flushed face.[51] Confronted with a virulent tropical disease virtually unknown in Britain, Rush was initially unsuccessful in treating the illness with conventional therapeutics. After some trial and error attempts and the study of previous medical reports, Rush concluded that the excessive stimulus of this virulent ailment had to be decreased through the early application of the so-called "antiphlogistic" regime representing the depleting practices of vomiting, purging, and bleeding patients according to old humoral theories.[52]

Consequently, Rush's aggressive bloodletting and purging, which became known as "heroic therapeutics," was born out of the realization that new diseases severely afflicting Americans had to be dealt with in novel ways. Rush's subsequent generalizations made from the yellow fever experience to cover other illnesses formed the basis for his unitary system of medicine. Failure to account for such a link between diseases, medical theory and practice severely limits an understanding of Rush's writings and actions, contributing to distorted interpretations of his role in American medicine.[53]

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[49] G. B. Risse, "The Brownian system of medicine: its theoretical and practical implications," *Clio Medica*, 1970, *5:* 45-51.

[50] Benjamin Rush, "An inquiry into the proximate cause of fever," in *Medical Inquiries and Observations*, 5 vols., (Philadelphia, 1796), vol. 4, pp 121-182.

[51] Benjamin Rush, "An account of the bilious remitting yellow fever as it appeared in Philadelphia in the year 1793," in *Medical Inquiries and Observations*, (1815), vol. 3, pp 39-193. See especially pp. 47-48.

[52] Benjamin Rush, "A defence of blood-letting, as a remedy for certain diseases," in *Medical Inquiries and Observations*, (1815), vol. 4, pp. 173-224.

Further illustrations of the interplay between disease, medical theory and therapeutics can be readily found. One is the nineteenth-century debate over an apparent change in disease affecting the British population.[54] Such a theory was first formulated by William P. Alison in Scotland in an attempt to defend the practice of bloodletting while acknowledging its contemporary decline.[55] The argument made by Alison and his followers was that since 1830 most infectious diseases had changed from a "sthenic" to an "asthenic" clinical form, thereby forcing physicians to abandon antiphlogistic depleting procedures and shift towards stimulating treatments such as the use of alcohol.[56]

The argument is similar to the eighteenth-century rationalizations provided by Hutchinson. Thus, the decline in bloodletting and the emergence of alcohol as a stimulant in mid mineteenth-century therapeutics certainly owes a considerable debt to the shifting patterns of epidemic diseases. Gradual resistance to most prominent ailments, reflected in decreased inflammatory symptomatology, played an important role in forcing changes in medical practice. These modifications, in turn, prompted vigorous discussions concerned with scientific methodology and the implications of science for medicine.[57]

Another question awaiting detailed study is the relationship between typhoid fever and the medical system of the French physician François V. Broussais. According to one historian, the frequency of this disease in France during the 1820s probably influenced Broussais' ideas on the gastrointestinal origin of disease.[58] The French School's emphasis on localization of lesions accompanying the various illnesses had led to the performance of systematic autopsies. Newly invented scissors readily exposed the intestines in their entirety. Not surprisingly, French physicians began reporting the intestinal lesions characteristic of a typhus-like fever "typhoid." The 1829 publication by Pierre C. A. Louis clearly established the new disease entity.[59]

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[53] R. H. Shryock, "The medical reputation of Benjamin Rush contrasts over two centuries," *Bull. Hist. Med.*, 1971, *45:* 507-552.

[54] I refer to the contributions on this subject by John H. Warner, who under my guidance wrote a paper entitled "The change of type theory of disease: a 19th century explanation for the 'silent revolution' in therapeutics "

[55] W. P Alison, "Notice of cases of pleurisy and pneumonia in the clinical wards of the Royal Infirmary in summer 1850," *Monthly J. of Med Sci* , 1850, *11*· 157-173.

[56] See also W. P. Alison, *Cases Illustrating the Asthenic Form of Internal Inflammation Now Common in this Country* (Edinburgh· Sutherland and Knox, 1852).

[57] Lester S. King, "The blood-letting controversy: a study in the scientific method," *Bull. Hist Med* , 1961, *35*· 1-13.

The typhoid lesions frequently observed at the autopsy table had a great effect on Broussais. In formulating his new medical theory, the so-called "physiological medicine," the French physician sought to establish a morphological basis for John Brown's clinical "asthenia."[60] Changes in stimulation would irritate certain bodily organs, leading to congestion and physical disorganization. The gastrointestinal tract was always involved, claimed Broussais, and all fevers were based on simple or complicated "gastro-enteritis."[61]

The therapeutic implications of Broussais' "physiological medicine" called for the abandonment of all herbal or metal remedies capable of acting as emetics and purgatives. The excessive irritability of the stomach and intestines was checked with the anti-phlogistic use of blood-letting through leeches applied to the abdomen.[62] This was supplemented by abstinence from food as well as the use of water and acidulated drinks. In short, Broussais' highly influential ideas and therapeutics most assuredly reflect epidemiological conditions prevailing in France, especially in a large metropolitan center such as Paris with its expanding hospital population.

Finally, sectarian movements in nineteenth-century medicine ought to be more closely examined in relation to the diseases prevalent at that time. Throughout most of the period the morbidity and mortality from diseases such as yellow fever, cholera, and typhoid fever were consistently enhanced by the traditional depletive measures designed during an age in which these conditions were not prevalent. In fact, certain nineteenth-century physicians stressed that the popularity of homeopathy, especially in the United States, could be largely ascribed to its beneficial effects on diseases with significant bowel pathology.[63] In the case of hydropathy, its gradual fame seems to have been related to the increase of syphilis and its iatrogenic companion, mercurialism. Between the years 1829-1839, numerous physicians visiting Vincent Priessnitz's water cure at Graefenberg reported a large number of patients suffering from both illnesses. The disappearance of some obvious symptoms of mercurial poisoning and cutaneous syphilis may have been important factors in building an early curative reputation for hydrotherapy.[64]

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[58] Erwin H. Ackerknecht, *Medicine at the Paris Hospital 1794-1848* (Baltimore: Johns Hopkins Press, 1967), p. 79, and *ibid.*, "Broussais or a forgotten medical revolution," *Bull. Hist. Med.*, 1953, *27*. 323

[59] Pierre C. A Louis, *Recherches anatomiques, pathologiques et thérapeutiques sur la maladie connue sous les noms de gastro-entérite, fièvre putride, adynamique, ataxique, typhoide, etc.*, 2 vols. (Paris: Baillière, 1829).

[60] François Broussais, *Principles of Physiological Medicine*, trans. I. Hays and R. E. Griffith (Philadelphia: Carey, 1832), pp 29-36.

[61] *Ibid.*, pp. 180-187.

[62] *Ibid.*, pp. 483-495 and 514.

As seen from the preceding examples, efforts to substantiate relationships between disease states and medicine are unquestionably fraught with difficulties arising from their complex connections. As stated before, disease is a biological as well as a social phenomenon, never static but constantly subjected to many influences ranging from genetics to religion. Textbook depictions of a "natural" history of disease are mere abstractions. Every interaction between disease-causing parasites and their human hosts is profoundly shaped by environmental and social forces, including medicine.

What are the pitfalls of relating disease and medicine? In the first place, one must be wary of the antiquated terminology employed by older physicians in characterizing past diseases. In many instances the archaic labels cannot be translated into more specific modern terms. This is also true for the clinical descriptions accompanying the old nosology. Often these symptom-groupings appear incomplete in the light of more contemporary precision, the result of a more limited past medical discernment commensurate with the knowledge available at the time.[65] To attempt retroactive diagnoses based on insufficient clinical or pathological data is often hazardous and misleading. Therefore, in the previous examples, I have dealt with the diseases in their eighteenth-century context and retained the historical nomenclature without making absolute judgements concerning their possible modern counterparts. This is not to say that modern insights into diseases ought to be avoided when studying their past occurrences. Quite the contrary, recent advances in a variety of basic medical sciences provide useful data for the clarification of problems in the history of diseases.[66]

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[63] John Ellis, *Personal Experience of a Physician With an Appeal to the Medical and Clinical Professions* (Philadelphia: Hahnemann Publishing House, 1892), pp. 14-15

[64] See the doctoral dissertation of Christa Quack, "Das Krankengut der Priessnitzschen Wasserheilanstalten," (Univ. of Bonn, 1966), especially pp. 42-46.

[65] Sigerist, *A History of Medicine*, vol. 1, chap. 1, p. 73. A recent work dealing with this issue is J. P. Peter, "Disease and the sick at the end of the eighteenth century," in *Biology of Man in History*, ed. by R. Forster and O. Ranum (Baltimore: Johns Hopkins Press, 1975), pp. 81-124.

For this purpose a rudimentary knowledge of the clinical, pathological, and epidemiological aspects of certain prevalent diseases will be necessary. The pertinent information can be grasped from a variety of sources and could be limited to a handful of infectious diseases that acquired epidemic proportions, mental states considered deviant, or a series of chronic ailments—all depending on the historian's principal focus of research. Here people with medical training can be extremely useful in guiding their colleagues.[67]

Epidemiology, demography, nutrition, and historical geography may shed considerable light on past biological situations. Yet most reconstructions will, by necessity, remain tentative and hypothetical since they are similarly based on the shifting sands of contemporary knowledge. Thus, any study of disease as a necessary context for medical ideas and practices must combine data from a host of disparate disciplines. Awareness of the intellectual factors shaping medical views and activities must be combined with an understanding of the social settings in which they take place. The approach must be interdisciplinary.

What is to be gained by the more prominent inclusion of disease as a context for medical history? For historians, such an association will help clarify how societies have "coped" with the problem of epidemic illness through the establishment of healing roles, methods and explanations. More narrowly, the perspective will shed light on the importance of certain medical theories and practices, as well as medical epistemology in general.[68]

Contemporary medicine needs to acquire a better understanding of the relationship between disease and medical practice. The success of scientific medicine is largely due to its ability to conquer virtually all acute infectious diseases afflicting mankind in epidemic proportions. Yet much of this decline in disease can be ascribed to increased human resistance and less exposure due to prolonged, global dissemination of such diseases.[69] At the same time, a shift from acute problems to chronic degenerative processes places new burdens on the prevailing medical models. The new patterns of disease, gradually affecting larger populations, will undoubtedly have profound effects on medical thought and practice, a situation exemplified by the tensions between the medical profession and society regarding cancer therapy.

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[66] For an excellent case study see R. P. Hudson, "The biography of disease: lessons from chlorosis," *Bull. Hist. Med.*, 1977, *51*· 448-563.

[67] At Wadham College, Oxford, Dr. John M. Potter has, in fact, established a *Historian's Medical Information Bureau.* This organization serves as a clearinghouse for historians "seeking expert specialist opinion on medical matters related to their studies." Potter (personal communication) has over 50 specialists on file who have offered their services.

[68] M. W. Watrofsky, "The mind's eye and the hand's brain· toward an historical epistemology of medicine, in *Science, Ethics and Medicine,* ed. by H. T. Engelhardt, Jr., and D. Callahan (Hastings-on-Hudson, N.Y.: Hastings Center, 1976), pp. 167-194.

Finally, physicians ought to understand that diseases are not immutable realities but temporary conceptual constructions used to account for patterns of distress recognized and accepted by society. Efforts to deal with such problems must accept the changing characteristics of diseases, constantly assessing the iatrogenic contributions to such shifts and avoiding the *post hoc ergo propter hoc* reasoning when dealing with the ebb and flow of disease. Thus, a historical examination of the links between disease, medical theory, and therapeutics promises to contribute a great deal to our understanding of modern medicine's role and evolution.

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[69] This thesis has been most persuasively argued by Thomas McKeown in his recent publications, *The Modern Rise of Population* (New York: Academic Press, 1976), and *The Role of Medicine* (London: Nuffield Provincial Hospitals Trust, 1976).

HISTORY OF TRICHINOSIS: PAGET, OWEN AND THE DISCOVERY OF *TRICHINELLA SPIRALIS*

WILLIAM C. CAMPBELL

In 1835 James (later Sir James) Paget found roundworms in human flesh. He was a first-year medical student at the time, and his discovery was largely eclipsed by the opportunistic intervention of Richard (later Sir Richard) Owen, who was ideally situated to exploit young Paget's good fortune. The roundworm was *Trichina* (later *Trichinella*) *spiralis*, soon to become infamous as the causative agent of trichinosis.[1] The story of the discovery has been told so many times that further commentary might seem unwarranted.[2] Yet the account remains needlessly incomplete, and it is by no means clear that the prevailing interpretation is as fair as it might be. Richard Owen, everyone's *bête noire*, is hardly likely to emerge from any revision as Mr. Clean; but nor, on the other hand, should James Paget continue forever to be viewed as Owen's hapless and helpless victim. It is the purpose of the present paper to fill in some of the lacunae in the published record, to examine Paget's failure to publish his discovery, and to proffer some conjectures that might contribute toward a fuller and more balanced account.

The central facts are easily stated. Paget discovered the roundworm, encysted in muscle, while dissecting a cadaver at St. Bartholomew's Hospital, London, on February 2, 1835. He reported his discovery to the students' medical club, the Abernethian Society, at the Hospital on February 6. Owen, having studied specimens from the same cadaver, de-

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[1] The disease is more correctly termed "trichinellosis," but the original "trichinosis" has become so thoroughly entrenched in the English language that the amended form has been unable to supplant it. The words are now used interchangeably, with the older form still being the more common in medical usage.

[2] Reviewed in English by W. R. Bett, "The discovery of the *Trichina spiralis*," *St Bartholomew's Hosp J.*, 1928, *36*: 39-42; G. Blumer, "Some remarks on the early history of Trichinosis," *Yale J Biol Med.*, 1939, *11*: 581-588; W. D. Foster, *A History of Parasitology* (Edinburgh: Livingstone, 1965), pp. 68-79; S. E. Gould, *Trichinosis* (Springfield, Ill.: Charles C Thomas, 1945), pp. 3-19; E G. Reinhard, "Landmarks of Parasitology II. Demonstration of the life cycle and pathogenicity of the spiral threadworm," *Experimental Parasitology*, 1958, *7*: 108-123; S. E. Gould, *Trichinosis in Man and Animals* (Springfield, Ill.: Charles C Thomas, 1970), pp. 3-18. The subsequent discoveries of the life-cycle and pathogenicity of *T. spiralis*, epic adventures though they were, are not within the scope of the present study For a full account of these later events see V. Becker and H. Schmidt, *Die Entdeckungsgeschichte der Trichinen und der Trichinosis* (Berlin: Springer-Verlag, 1975).

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scribed and named the organism at a public lecture on February 24, and his lecture was published in the same year.[3] Owen's description was to capture the attention of the medical and zoological world; it was he, not Paget, who laid the cornerstone on which the now vast literature on *Trichinella* and trichinosis has been built.

In the general hand-wringing over Paget's plight, little attention has been paid to Paget's own description of the worm. In later years, he referred to his discovery of the worm, as recorded in the minute-book of the Abernethian Society, and added "I proposed immediately afterwards, on the recommendation of Mr. Stanley,[4] to send a description of it to the *Medical Gazette*, but from this I was dissuaded; and the admirable memoir of Professor Owen, much more complete and exact in zoological detail than anything I could have written, was communicated to the Zoological Society on Feb. 24."[5] The phrase "anything I could have written" implies that his account had not been written: the description he had intended to send to the *Medical Gazette*, was a description that he would have had to write. In fact, however, he had written not one, but two, manuscripts describing the worm. Neither paper had been published at the time of Paget's recollection in 1866, nor indeed has either one been published since.[6] In view of the notoriety that *T. spiralis* was later to attain as a human pathogen, it seems worth-while to bring Paget's account to light and to ask why Paget allowed himself to be dissuaded from publishing it.

The two manuscripts that Paget prepared are among the present holdings of the Library of the Royal College of Surgeons of England. One of them is clearly the first manuscript, the writing of which was prompted by Mr. Stanley. It is transcribed in Appendix 1 together with the introductory note to the Editor of the *London Medical Gazette*. The introductory note, dated February 10, 1835, is interposed between the title and the text; that is to say, the first sheet of the manuscript bears the title, the note of submission and the beginning of the text (Figure 1).

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[3] R. Owen, "Description of a microscopic entozoon infesting the muscles of the human body," *Trans Zool. Soc London*, 1835, *1* 315-324. Owen's *Trichina* was renamed *Trichinella* by Railliet (*Recueil de médecine vétérinaire*, 1896, *3*· 157-161).

[4] Edward Stanley was lecturer in Anatomy and Physiology at St. Bartholomew's Hospital.

[5] J Paget, "On the discovery of Trichina," *Lancet*, 1866, *1:* 269

[6] Since these words were written Paget's account has in fact been published in B. H. Kean, K. E. Mott and A. J. Russell's monumental work *Tropical Medicine and Parasitology: Classic Investigations* (Ithaca, N.Y : Cornell University Press, 1978), pp. 459-462. It was not the objective of those authors to analyze the component autograph manuscripts or to discuss the relationship between Paget and Owen. Kean, Mott and Russell have also reproduced, in the same work, three of Paget's sketches of the worms and cysts.

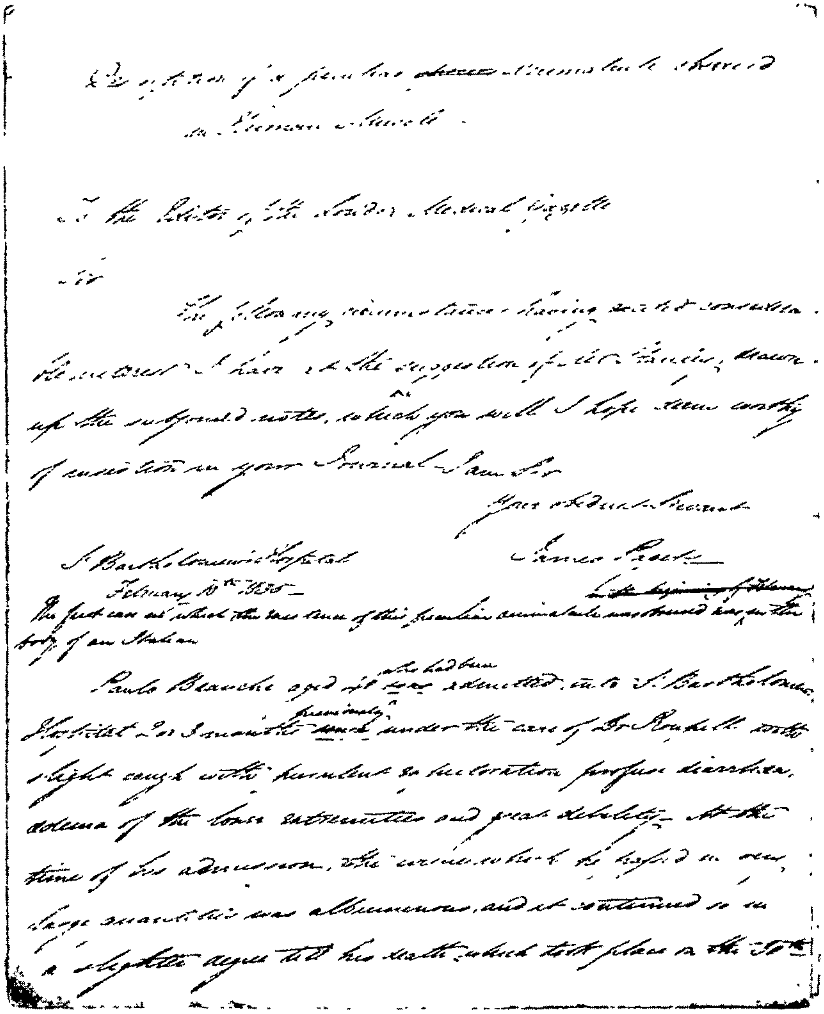

Figure 1. Facsimile of first sheet of Paget's ms. of February 10, 1835. It can be seen that an insertion has been made following the note of submittal—probably after the death of the second case, on February 20.

The original is written in ink, but bears a number of pencilled annotations. These have not been incorporated in the transcription. Perhaps they are the suggestions of someone who reviewed the manuscript on Paget's behalf. This might have been Dr. Roupell,[7] whose patient it was that was being described, because of the annotator's evident familiarity with the clinical history of the case. For example, above the words "the dropsy decreased" is the pencilled notation "was much reduced." Above the phrase "the diarrhœa continued with great obstinacy" are the words "accompanied by high fever."

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[7] George Leith Roupell was lecturer on *materia medica* at St. Bartholomew's

Paget's description of *T. spiralis* contains the assortment of hits and misses that one would, under the circumstances, expect to find. It is a good deal more succinct and informative than many of the clinical notes appearing in the medical journals of the day.[8] The cysts are assigned to the connective tissue rather than to the muscle fibers. (The phrase "cellular tissue connecting the muscle fibers" now seems almost clumsy, but the description of a tissue as cellular in 1835 must have been a rather modern touch.) A striking success is Paget's reference to the pointed end as the head end. It is striking, however, chiefly because Owen, the master, blundered in reaching the opposite conclusion. It was also apparently somewhat fortuitous, since Paget was evidently uncertain on the point—so uncertain in fact that he deleted this surmise from the undated manuscript written after Owen's lecture (*vide infra*). At the end of the manuscript, Paget mentions that preparations of *T. spiralis* material had been deposited in the Museum of St. Bartholomew's Hospital. These specimens were apparently discarded between 1884 and 1889, with Paget's permission, following receipt of better preparations from the Pathological Institute of Leipzig in 1881.[9]

In adducing the manuscript of February 10 in support of Paget's priority, it must be recognized that the manuscript was evidently altered by the author sometime after this date. It is apparent from examination of the autograph manuscript (Figure 1) that it originally began with the words "Paulo Bianchi aged 40 was admitted into St. Bartholomew's Hospital . . ." This was altered to read "The first case in which the existence of this peculiar animalcule was observed was in the body of an Italian Paulo Bianchi aged 40 who had been admitted into St. Bartholomew's Hospital . . ." This opening is now identical with that of the Undated Manuscript. It is extremely unlikely that this opening would have been used had there not been subsequent cases, and it may be postulated that the change was made because of the discovery of the second case in late February. Since the February 10 manuscript contains numerous corrections, it may be that some of the other changes were also made after Owen's report of February 24, but there seems no reason to doubt that the main body of the report was written on February 10, the date of the combined submittal note and manuscript.

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[8] Paget was an experienced observer, having already published, with his brother Charles, a book on the natural history of Yarmouth.

[9] Bett, "*Trichina spiralis,*" p. 41

In offering herewith the text of Paget's brief February 10 manuscript, it is hoped that Paget's contribution to the history of trichinosis will become more widely appreciated. His technical priority over Richard Owen as discoverer is generally acknowledged, but the impression is often given that Paget merely stumbled across a new object without having appreciated its nature or significance. Owen continues to be credited with the discovery rather than the zoological description. The manuscript presented here makes clear that Paget not only found, but tried to describe, the worm we now call *Trichinella spiralis*. Indeed his description, never actually submitted to an editor, compares reasonably well with Owen's paper—which appeared in four different journals in one year (two as first-person narratives, two ostensibly as third-person reports of Owen's lecture).[10]

The other Paget manuscript in the Library of the Royal College of Surgeons is undated, has many fewer alterations than that of February 10, and is plainly a revised version. On page 6 of the manuscript, reference is made to a contribution by Hilton at "this Society" indicating that this manuscript was prepared for oral presentation to the Medical-Chirurgical Society (to which Hilton's contribution is known to have been made).[11] In a letter to William Hooker,[12] dated April 16, Paget refers to Owen's lecture of February 24 and adds "since that, another which I had drawn up has been read at the Medico-Chirurgical Society." If this is the manuscript in question, its date could thus be placed between February 24 and April 16. Further, the Undated Manuscript's account of the second case of trichinosis (*vide infra*) means that it was written after February 26.

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[10] R. Owen, "Microscopic entozoon," *Trans. Zool. Soc. London*, 1835, *1*: 315-324; also "Microscopic entozoon," *Proc. Zool. Soc. London*, 1835, Part 3, 23-27; "Microscopic entozoon," *London Med. Gaz.*, 1835, *16* 125-127; "Microscopic entozoon," *ibid.* 1835, *17*. 472-478. These multiple publications have resulted in some inaccuracies in literature citations. The first of the *London Medical Gazette* articles appeared in the issue of that journal for Saturday, April 25, 1835 and is identical to the third-person report in the *Proceedings of the Zoological Society of London* The second *Gazette* article appeared in the issue of Saturday, December 26, 1835, and appears to be identical to the first-person account in the *Transactions of the Royal Society of London*—even to the extent of inclusion of the Appendix dated November 18, 1835.

[11] Hilton was Demonstrator in Anatomy at Guy's Hospital, London. He had described cysts in the muscle of a cadaver, and suspected them of being cysticerci ("Notes of a peculiar appearance observed in human muscle, probably depending upon the formation of very small cysticerci," *London Med Gaz* , 1833, *11*· 605). Paget and others believed that the objects seen by Hilton had in fact been cysts of *T. spiralis*

[12] S. Paget, ed., *Memoirs and Letters of Sir James Paget* (London: Longmans, Green, 1901), p 58 The excerpt from Paget's letter to Hooker is in itself enigmatic. Instead of simply saying that he had read a paper, he says that he had written it and that it had been read. This suggests that Paget may have been unable to present the paper himself.

Although the Undated Manuscript makes no mention of Owen, the Paget papers in the Library of the Royal College of Surgeons contain three manuscript sheets that appear to be draft portions of the Undated Manuscript,[13] and Owen's lecture of February 24 is mentioned on one of those sheets. This manuscript fragment, assuming that the third page is correctly assigned, complicates the dating of the Undated Manuscript because the third page contains case reports dated November 16 and December 6, 1835. (The clinical case of November 16 is almost certainly the case described by Owen in the appendix to his February 24 paper in the *Transactions of the Zoological Society of London*. In both accounts, the cysts were said to be more gritty and opaque than before.) These case reports, however, differ in style from the preceding text, having dates as headings and being written partially in note form. They may have been added long after the rest of the fragment was written. Nevertheless, since such an extension in time cannot positively be assumed, it must be held that the Undated Manuscript, being based on the fragment, may have been written as late as December 1835. Since the Undated Manuscript is more polished than that of February 10, it might be considered the more suitable for publication at the present time. However, the present essay is intended, among other things, to document Paget's priority, and for that purpose the February 10 manuscript must clearly take precedence.

In the Undated Manuscript, the description of the first case ends near the bottom of page 5. There follows an account of larvae discovered in a second case, an Irish woman who died on February 20 and whose body was examined 6 to 8 days later.[14] The Undated Manuscript also contains Paget's offhand, but rather prophetic, conclusion that "it is scarcely possible to imagine such myriads of beings however insignificant their size, to infest the whole body of an individual, without producing some material effect on his condition." This view differs in emphasis from Owen's view of the subject. Owen's opinion was based on only the first two cases, while Paget's was based on the first three, but none of the cases had signs or symptoms clearly attributable to helminth infection. Owen, while acknowledging debility as either an effect of the worms or as "the probable condition under which they are originally developed" concluded that "it is not improbable that in all cases the patient himself will be unconscious of the presence of the microscopic parasites which are enjoying their vitality at his expense."[15] Paget's conclusion was perceptive but expressed with excessive prudence. Owen was bolder—and, as it happened, wrong.

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[13] These three autograph pages appear to constitute a single fragment of a Paget manuscript. The first two are clearly consecutive, since they are on a single sheet of paper. On the basis of context, and comparison with the Undated Manuscript, the third page is believed to follow directly on the first two. The content of these pages may also be found on pages 5 to 8 of the Undated Manuscript in the same archives. It seems probable that the fragment represents three discarded pages originally written as part of the Undated Manuscript. Asterisks on the second page of the fragment call for rearrangement of material, and this rearrangement has apparently been carried out in the Undated Manuscript. It is also conceivable that the three pages may be an extension of the February 10 manuscript—perhaps an attempt to update it by adding additional case reports, and submitting it for publication after all. This is suggested by Paget's revision of the opening statement of the February 10 manuscript (*vide supra*). Paget may have tried updating that manuscript and then decided that it would be better to rewrite the paper, thus producing the Undated Manuscript.

A hand-written account of the discovery, with a description of the worm, may still be found in the minute-books of the Abernethian Society, preserved in the Library of St. Bartholomew's Hospital. Paget's discovery is recorded on page 19 of the second volume.[16] The account is written in the third person; it is presumably in the hand of the Recording Secretary, although the material was undoubtedly provided by Paget. Despite Paget's distinction between this minute-book "abstract" and the "description" that he intended to publish in the *London Medical Gazette*, the former is very similar to the manuscript that he prepared on February 10 for submission to the *Gazette*. The minute-book account seems to have given rise to a curious error. In Spencer Cobbold's attempt to settle some of the disputes concerning the discovery of *T. spiralis*, he suggested that the current officers of the Abernethian Society might "think it worth their while to make more fully known some of the 'missing links' in the chain of evidence."[17] The officers did this anonymously in a letter to the *Lancet* in

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[14] Paget later refers to "the three instances" in which *Trichinella* had been observed—the third instance probably being the case in which Hilton demonstrated cysts that were subsequently assumed by Paget and others to be *Trichinella* cysts. If the Undated Manuscript was written after the third page of the undated fragment, Paget should here have referred to five instances; it is conceivable that it was written between separate entries on that third page, and that the third instance referred not to Hilton's circumstantial case, but to the unequivocal case of November 16.

[15] Owen, "Microscopic entozoon," 323.

[16] This volume is often cited as "Transactions of the Abernethian Society." It has no flyleaf and the spine of the modern binding bears simply the title "Abernethian Society Minute Book."

[17] T. S. Cobbold, "On the discovery of Trichina," *Lancet*, 1866, *1:* 224-225.

1866, and in it they made the remarkable statement that "Mr. Paget in the same paper alludes to the existence of hooklets with which the (male) worm is furnished."[18] In fact the Paget manuscripts make no such allusion, and the error (which seems to have escaped the attention of previous commentators) undoubtedly arose from a misreading of Paget's discussion of the possible relationship of *T. spiralis* to certain larval parasites of fish. The Paget papers in the Library of the Royal College of Surgeons include what appears to be a rough draft of the account in the Abernethian minute-book. It is clearly not by the hand that recorded the entry in the minute-book, and while the handwriting also does not seem quite typical of Paget, the wording of the text clearly suggests that it is Paget's handiwork. It may be supposed that this draft, whoever the scribe, was composed close to the time of the meeting of the Abernethian Society on February 6. Since the rough draft is neither so complete as the manuscript of February 10, nor essential to Paget's priority, it need not be considered further.

James Paget, as we have seen claimed that he had been "dissuaded" from publishing a report of his astonishing discovery of myriad roundworms in human flesh. Indeed the existence of a manuscript that predates Owen's paper makes it clear that he had intended to stake out his claim for priority in the customary fashion. Why, then, did he not publish his paper?

One of the most oft-quoted passages in the writings of Paget is taken from his *Memoirs,* written between 1880 and 1885.[19] Referring to Owen's paper, Paget said "It mattered little; the repute of the discovery would have been of no use to me; and I should have gained less happiness by disputing for it and obtaining it than I have enjoyed in the personal friendship with Owen ever since." That statement has an air of generosity, even nobility, about it. How splendid, after all, to put personal friendship before scientific priority! It has widely been accepted that Paget suppressed his desire for recognition for reasons of generosity, or at least modesty. Reinhard[20] called him "a modest young man" and went on "what Paget's thoughts were when he read Owen's paper we shall never know, but what he politely wrote was this: 'The admirable memoir of Professor Owen was much more complete and exact in zoological detail than anything I could have written.'" The implication is that Paget was too polite to say what he really thought of Owen's action. The account of Bett,[21] although published in a hospital journal, reads more like a soap opera: "While the great Owen basked in the sunshine of the applause of his professional brethren, the lonely heart of James Paget must have felt the injustice of this in aching scar, though the mask of his austerity belied his innermost feelings."

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[18] Anon., "On the discovery of Trichina," *Lancet,* 1866, *1* 270.

[19] Paget, *Memoirs,* p. 56.

[20] Reinhard, "Landmarks," 111.

There is something wrong with all of this. Any disclaimer of an interest in scientific priority is ground for suspicion; and the self-effacement implicit in Paget's reminiscence is not borne out by examination of contemporary documents. This is not to suggest dissembling on Paget's part, but rather to suggest that his recollection had become blurred by the passing years and by the accumulation of honors and fame. Paget knew full well in 1880 that his contribution to the discovery of *T. spiralis* had been noticed and would eventually find its place in medical history. He could afford to suggest (and would tend to believe) that he had neither fought for, nor obtained, the credit that was due him.

Three contemporary documents are much more revealing than the memoir Paget wrote 45 to 50 years after the fact. One is the letter to William Hooker, written just two and a half months after the discovery and quoted above.[22] In that letter Paget tells Hooker of his discovery and adds "not being well acquainted with the subject, I thought it best that it should be described by someone of more authority than myself, and Mr. Owen, of the College of Surgeons, read a paper on it at the Zoological Society . . ." This does not sound like the remark of one who had just faced the problem of whether to dispute with Owen for credit, but rather gives the impression (assuming it was not a face-saving misrepresentation) that Paget had invited Owen to step in. We shall see that Paget did in the end decide that it was best that Owen write the first paper, but the decision was far from spontaneous and the reason was not so simple.

The other two documents are letters[23] that Paget wrote to his brother Charles, then pursuing his medical career in Cambridge. These letters were written very soon after the discovery and, what is more important, were written to Paget's closest confidant[24]—someone he did not need to impress, someone with whom he had lived and worked, someone with whom he could be utterly frank. These autograph letters have not been published hitherto; but they seem to this commentator so important to an understanding of Paget's position that they are transcribed herewith (Appendix 2, Appendix 3 and Figure 2).

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[21] Bett, "*Trichina spiralis*," 41.

[22] Letter of April 16, 1835 to William Hooker, in Paget, *Memoirs*, p. 58.

[23] In the Library of the Royal College of Surgeons of England.

[24] It is unlikely that Lydia North would then have been Paget's most intimate friend; he did not begin his 8-year-long engagement to her until the following year.

One of those letters to Charles Paget was written on February 11, only five days after James Paget had presented his discovery at a meeting of the Abernethian Society in St. Bartholomew's Hospital. It contains several significant points: (1) Although Paget had just the previous day written his preliminary account intended for publication in the *London Medical Gazette*, he was now contemplating a morphological description to be written either by Owen or himself. (2) Paget was inclined to think Owen should write it because Owen had had the benefit of greater microscopical resolution. (3) Paget had "taken care" that he would receive "at least some credit for the discovery." (4) Such credit "was not to be had without some trouble."

The second letter to Charles Paget is dated February 25—just one day after Owen's historic presentation of the *Trichinella* discovery at a meeting of the Zoological Society of London. Owen's talk and the question of priority were obviously very much on Paget's mind. He cites several factors that were "among the many reasons" for his not publishing the description of the new worm: (1) a lack of knowledge, possibly leading to error in phylogenetic assignation; (2) lack of reliable microscopical resolution of morphological features, leading to controversy over structural detail; (3) a neophyte's inability to place the paper expeditiously in a reputable journal; (4) lack of the scientific reputation needed to convince readers of the paper's validity; (5) political expediency in his relationships in the hospital. A sixth reason, modesty, is specifically disclaimed.

Discoverers cannot be expected to be entirely objective or dispassionate about their discoveries, so we need not hesitate to examine the alleged reasons. I would like to suggest consolidation and modification of these reasons into four factors that were probably of paramount importance in Paget's "giving up all formal responsibility on the subject."

First, I think modesty, or at least diffidence, should be regarded as a genuine factor. James Paget was perfectly capable of writing a concise and acceptably accurate description of the new worm. However, it is likely that, as an amateur naturalist and first-year medical student, Paget stood in genuine awe of Owen, who was already, at the age of thirty years, renowned as a comparative anatomist and had even been elected a Fellow of the Royal Society.

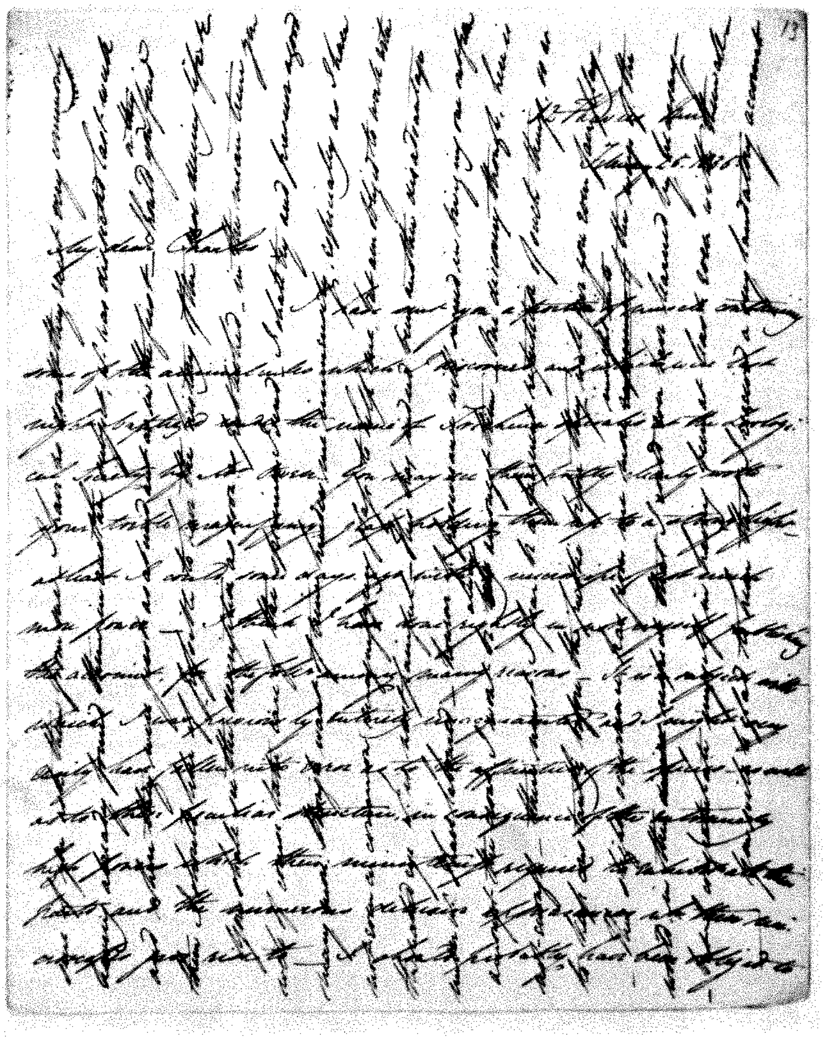

Figure 2. Facsimile of first page of letter by James Paget to Charles Paget, February 25, 1835. Paget discusses his reasons for not publishing his account of the discovery of *T. spiralis*. See Appendix 3.

Second, political expediency, then as ever, could not be ignored. Clearly it was in Paget's mind when he wrote on February 25 that it would be to his advantage "not to stand too forward"; and apparently he was satisfied with the success of his stance, for in his *Memoirs* he recalled "It was enough for my advantage that the discovery, and the paper at the

Abernethian, strengthened my position in the Hospital." Owen was, among other things, Professor of Comparative Anatomy at St. Bartholomew's; and one of the other faculty members was Thomas Wormald, a close ally of Owen.[25] Paget did not attend Owen's lectures but he would hardly have wished to antagonize the teaching staff. Owen was in a position to put Paget's discovery on record with speed and authority, and so long as Paget's contribution was acknowledged, there was mutual advantage in his doing so. Paget's concession to Owen in the matter of publication did not involve any ethical principle of great moment; expediency was not dishonor—and Paget was determined to shine brightly.

The third reason is not specifically mentioned by Paget, but rises inevitably from one of his other reasons. A zoological description of a brand-new organism calls for illustrations. The papers that Owen had already published on other topics had been illustrated with magnificent engravings. Masterful and detailed drawings of *T. spiralis* could be expected from the hands of Owen and his illustrators, and indeed it seems likely that Paget knew of such drawings at the time of his decision (a decision clearly made between February 11 and 25, the dates of the two letters to Charles Paget). Paget had exhibited sketches of *T. spiralis* at the Abernethian Society on February 6, but those sketches were not nearly good enough for publication. They were crude pen and brush sketches, showing tiny figures of larvae against an ink-washed background; of detail there was none. While they may not have warranted publication on zoological grounds, it would seem that some of them might now justifiably be brought to light on historical grounds (Figures 3-6).[26]

It is here suggested that one of Paget's main reasons for not pushing for publication of his paper was the embarrassment and frustration that he must have felt at having no suitable illustrations for it. It might at first be suspected that Paget was simply incapable of making a suitable drawing—that he was one of those individuals who cannot draw a picture of what they see. Any such supposition can be dispelled by reference to a drawing that Paget had made sometime earlier of a harbor scene near his

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[25] Thomas Wormald was Senior Demonstrator in anatomy at St. Bartholomew's. While best remembered as a teacher, he was also a surgeon and a farmer. Wormald was described by Owen as his friend, but by Paget as one who "disliked me . . . and became the chief opponent of my progress" in St. Bartholomew's (Paget, *Memoirs*, p. 50).

[26] Preserved in the Library of Royal College of Surgeons of England. One of the sketches (Figure 5) was reproduced by Bett, "*Trichina spiralis*," 40. Three others (including Figures 3, 4) have recently been published in Kean, Mott and Russell, *Tropical Medicine*, p. 460.

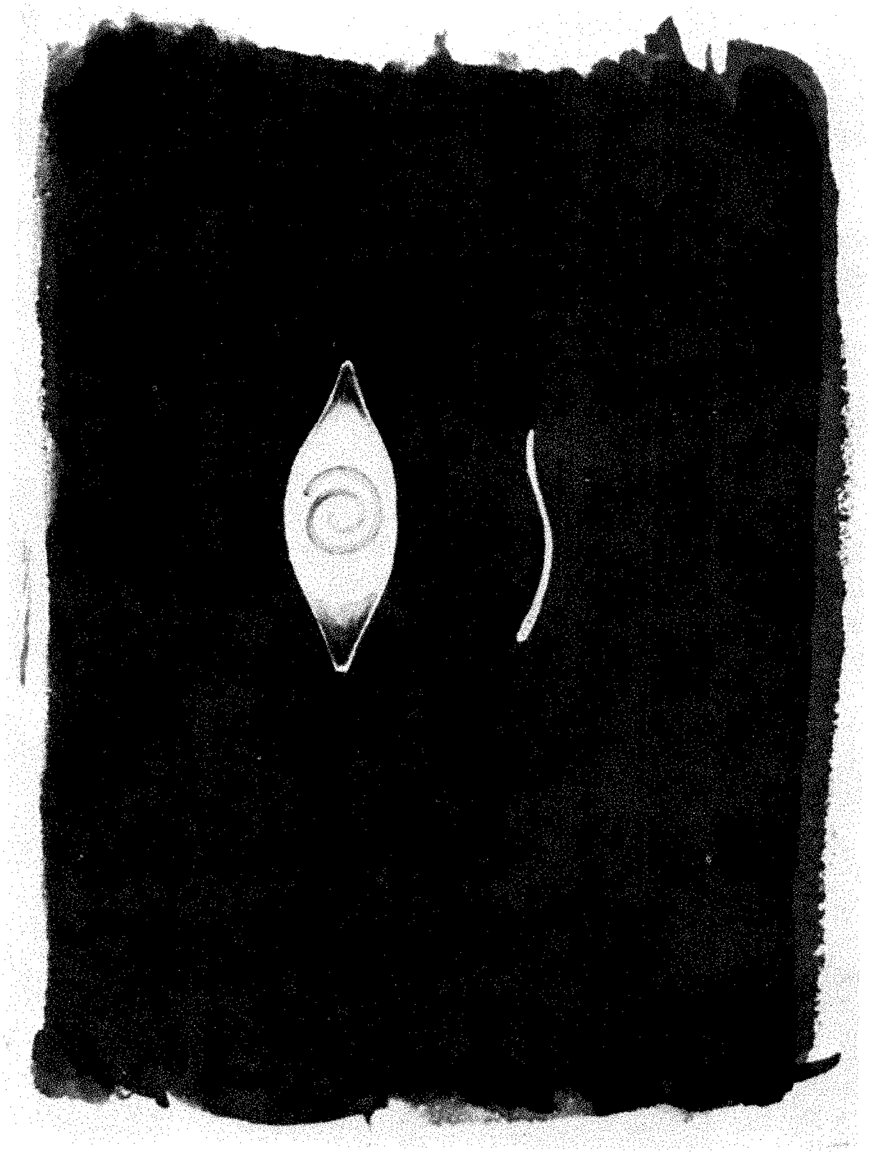

Figure 3.

Figures 3–6. James Paget's sketches of *T. spiralis*. Exhibited at the Abernethian Society on February 6, 1835.

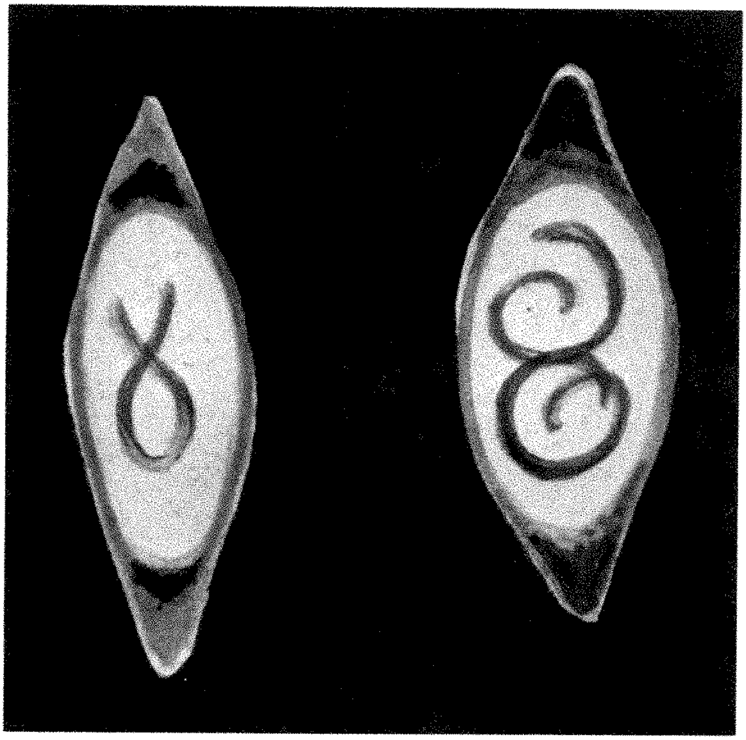

Figure 4.

boyhood home in Yarmouth, and reproduced in his *Memoirs*.[27] It is much more likely that Paget had not seen enough of *T. spiralis* to enable him to make acceptable drawings, and this was clearly a matter of microscopy.

Thus the fourth reason proposed for Paget's failure to publish, is his lack of access to a suitable microscope. Following his momentous dissection on February 2, 1835, Paget wanted to examine the new-found objects in greater detail. St. Bartholomew's Hospital did not possess a microscope, so Paget called on John Children, then Head of Zoology at the British Museum. The Head of Zoology, not having such an instrument, introduced Paget to the Keeper of Botany. He, Robert Brown, observer of the cell nucleus and discoverer of Brownian movement, had a microscope; and Paget thus was enabled to pursue his investigation of the specks on the muscles of the late Paulo Bianchi. As recounted by Paget in *Lancet* many years later, John Children, in introducing Paget, asked

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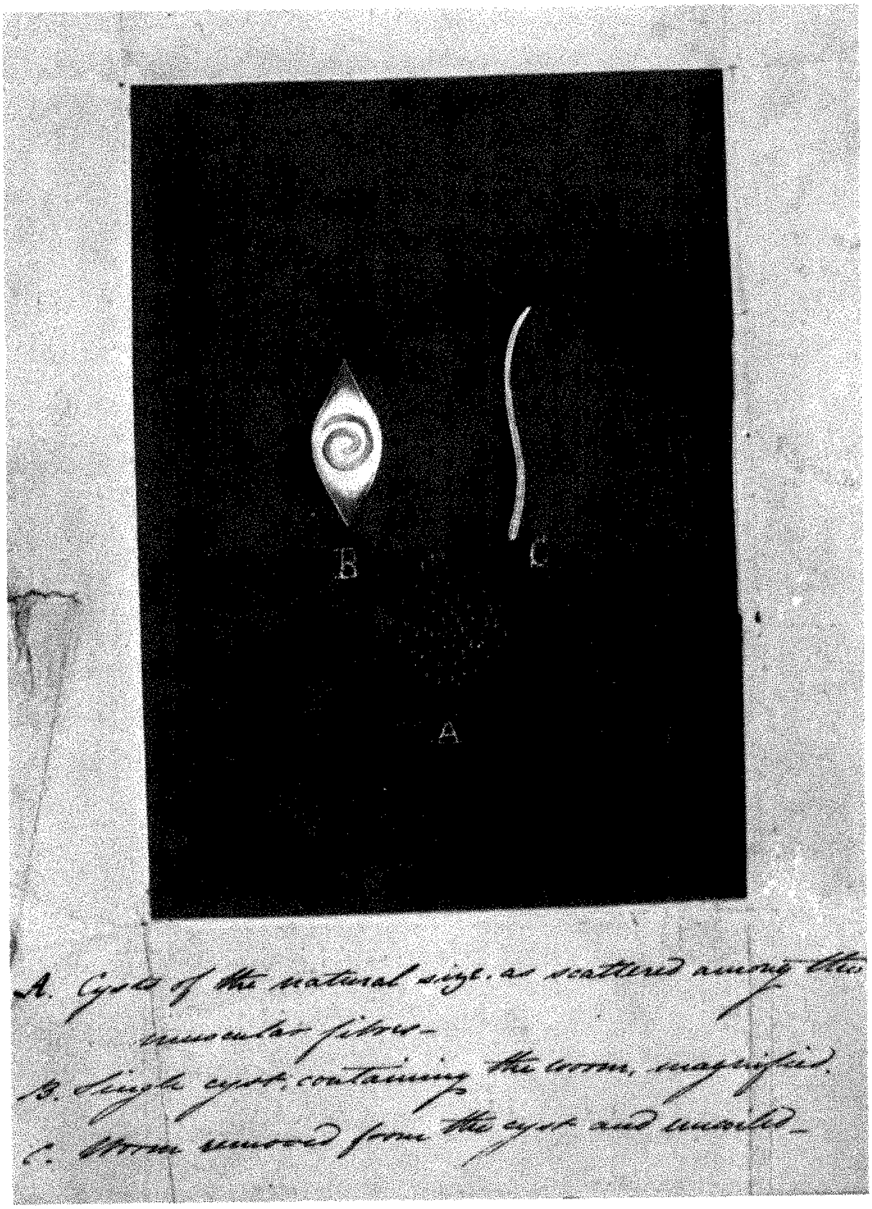
[27] Paget, *Memoirs*, opposite p. 19.



A. Cysts of the natural size, as scattered among the
muscular fibres–
B. Single cyst, containing the worm, magnified.
C. Worm removed from the cyst and uncoiled–

Figure 5.

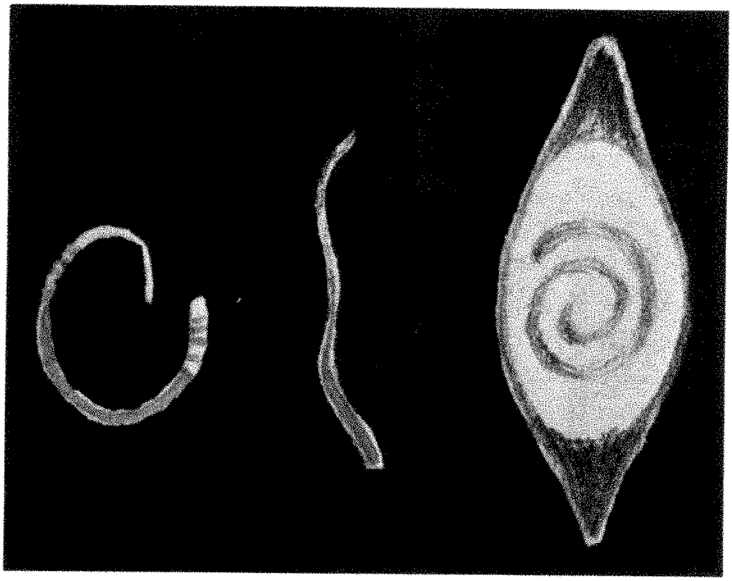


Figure 6.

Brown whether he knew anything about parasitic worms; and Brown replied "No, thank Heaven—nothing whatever." If this was indeed the opening exchange of the meeting, it must be concluded that Paget had already seen the worms and that he used Brown's microscope to study them, not to discover their presence in the cysts.[28] That would be consistent with Paget's remark, in the *Memoirs*, that his reason for going to the British Museum was that he "wanted to examine the entozoon."

On other evidence, however, it might be suggested that Paget had not seen the worms before visiting Brown. In his letter of February 25 to his brother (Appendix 2) Paget, referring to the animalcules, said "You may see these pretty clearly with your treble magnifying glass . . ." but this is an expectation based on his own experience with "a *microscope* of not much more power'' (italics mine). In that time and place ''microscope'' could have referred to any lens mounted on a stand. If Paget's initial discovery was made by means of a hand-held magnifying glass, it is strange that he would have qualified his advice to his brother by referring to the fact that he had himself used a microscope. Indeed it would be remarkable if Paget had been able to discern the worms with any degree of assurance, using a common magnifying glass of, say, 5X magnification, since the cysts themselves are only about 0.4 mm. long and 0.25 mm. wide, and frequently quite opaque. Paget may, however, have had the use of a more powerful magnifier such as one of the long-handled ''doublets'' or ''triplets'' used for examining skin lesions and giving a magnification of 10-30X. He was probably aware of Hilton's suggestion that cysts of this kind were tapeworm cysticerci.[29] Thus if his initial observation suggested the presence of a living creature within the cysts, Paget would suspect it to be a worm of some kind. Most of the accounts would seem to be consistent with the proposition that Paget's visit to the British Museum on February 2 was for the purpose of determining whether the ''entozoon'' was a worm and, if so, what kind of worm it was. The letter of February 25 implies that Paget saw the worms ''coiled up'' before examining them with a microscope; but his phrase ''directly afterwards'' suggests that this might be a slip, and that observation of the distinctive coiled nature of the worm was made in Brown's room on the very day in which Paget had observed the cystic nature of what had been regarded as spicules of bone. In this context it is worth noting the wording used by Paget in the earliest account we have of the episode—the February 10 manuscript presented herein. Writing only eight days after the event, Paget reported that on the muscles of the cadaver there were ''minute whitish specks.'' He added ''On closer examination with the microscope, these were found to be cysts containing small worms as represented in the accompanying drawing.'' In this sentence Paget probably was using the term ''microscope'' in contrast to a hand-held ''magnifying glass''; it is unlikely that he was contrasting one microscopic examination with a ''closer'' microscopic examination. The manuscript of February 10 thus supports the hypothesis that the incident in Brown's room was one of discovery rather than confirmation—but suggests that the celebrated exchange between Children and Brown may have been an interlude in that scene, rather than the prologue to it.

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[28] Paget, "Discovery of Trichina," 269. In Paget's *Memoirs* Brown's reply is given as "No: thank God." In his letter to *Lancet*, Paget wrote "Examining some of these 'spiculae' with a lens, I soon found that they were cysts, and almost directly afterwards ascertained that nearly every cyst contained a small worm coiled up. I was anxious to observe them with a microscope. . . ." Later in the same account Paget stated that with Brown's microscope he "soon observed structures in the worm which were before invisible"—clearly implying that this was not the first examination *of the worm*. (On the basis of the contemporary records it might be suggested that this report, written 31 years after the event, should have referred to "structures in the suspected entozoon" or "structures in the object" rather than "structures in the worm."

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[29] Hilton, ''A peculiar appearance,'' 605.

Paget later recalled that the microscope used by Brown was a simple, not a compound microscope. While one cannot tell from Paget's sketches the magnification at which they were made, the amount of detail shown is suggestive of a magnification of about 30-fold. It is not surprising that Brown used a simple microscope for the demonstration. Brown hardly ever used anything else. Good achromatic objective lenses had been available for some five years; and interest in compound microscopy was just then reawakening after a slumber of some 200 years. Brown had actually bought five good objective lenses in 1830; but like many of the old timers of the microscopical scene he had clung to the simple microscope with which he had accomplished so much and with which he was confident of distinguishing biological fact from microscopical artifact.[30]

This however, does not explain the limitation of Paget's observation to low-power magnification. Brown must have had access to magnification of 200 to 300-fold; he is said to have observed the cell nucleus with a single lens of 1/32 inch focal length.[31] Yet he evidently failed to provide Paget with such resolving power.[32] Apparently it was Brown and his assistant Bennett who did the initial dissection necessary for the viewing of the worms within and without their cyst. For this purpose Brown would naturally have used a low-power microscope with large working distance, and indeed Paget referred to it as a "dissecting" microscope. It may be that Brown had no particular interest in higher magnification. It is, at first thought, hard to believe that Paget would not have asked for greater magnification, but here again we must remember that Paget was in the presence of someone awesome. He was young and inexperienced and he happened to be an amateur botanist; now he was face to face for the first time with one of the most illustrious botanists of his day. Further, Paget would have known virtually nothing about microscopes and the magnifications available. In view of Darwin's recollection that Brown once refused to tell him the secret of his Brownian movement,[33] it is even conceivable that Brown (in the tradition of Leeuwenhoek) was less than magnanimous in allowing others to peep through his very best "glasses." On the whole it seems probable that Brown and Paget (and the bystanders Children and Bennett) simply considered the immediate problem resolved, and dramatically resolved at that.

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[30] S. Bradbury, *The Evolution of the Microscope* (Oxford: Pergamon Press, 1967), pp. 102-103.

[31] G. R. Taylor, *The Science of Life* (New York: McGraw Hill, 1963), p. 182.

[32] In the manuscript of February 10 Paget referred, with proper caution, to two lines that were "probably the outlines of the intestinal canal." An almost identical statement may be found in the minutes of the February 6 meeting of the Abernethian Society. In his exuberant letter of February 11 (Appendix 2) Paget told his brother about the worms and added "I made out clearly their intestines and have measured all their dimensions." However, in the same letter, Paget claimed that Owen (who later reported using magnifications of 200X to 300X) had used "far more powerful microscopes"; and in his letter of February 25, Paget acknowledged that others had seen the *structure* of the worms earlier than Paget himself (he having merely observed the *existence* of the worms). This would imply that Paget had not seen the internal structure of the worms on February 2. Unfortunately Paget appears to have left no record of a microscopical examination made between February 2 and 25 and the microscopical aspects of the discovery of *T. spiralis* remain uncertain. Probably Brown's simple microscope gave Paget enough magnification to distinguish some lines within the worms, but not enough, in his judgement, to allow him to claim that he had seen the "structure" of the worms. It is also possible that Paget glimpsed considerable detail during his first microscopic observation but did not have sufficient access to the microscope to permit a thorough morphological examination. In any case, the limitations of Paget's microscopy apparently prevented him from preparing suitable illustrations for his February 10 manuscript.

Reviewing the great variety of factors involved, it thus becomes easy to account for Paget's decision to yield to Owen in the matter of publication. When Paget wrote to his brother on February 11, he had not reached that decision. He was presumably still considering submission of his preliminary clinical report of February 10 to the *London Medical Gazette*, with the thought that it would not obviate the need for a zoological description—to be published by himself or, more likely, Richard Owen. In retrospect it might be regretted that the February 10 note was abandoned, since it actually contained both clinical and zoological information of great novelty and considerable insight. The crux of the matter would seem to be that not only did Paget have some reasons of his own for yielding to Owen, but that Paget and Owen struck a deal. Owen apparently agreed to give Paget credit in his paper, an agreement gained only with "some trouble" and carried out in parsimonious fashion. Paget, in a position of ethical strength but political and technical weakness, allowed himself to be "dissuaded" from publishing his initial note, but concluded that he had made the best of the situation. Paget's contribution was for years overshadowed by Owen's; but if Paget failed to get his just desserts, it might be said that he was a victim, in both the psychological and microscopical sense, of a lack of resolution.

Though still sometimes loosely called trichina, the scientific name of the worm that causes trichinosis is *Trichinella spiralis* Owen 1835, Railliet 1896. Thus has Richard Owen's name been linked forever with one of man's best known pathogens. The honor, only one of Owen's many claims on posterity, derives from his description and baptism of the parasite that had just been discovered by James Paget. In examining Paget's role in the discovery we have inevitably dealt also with the part played by Owen. There remain, however, some items that relate more specifically to Owen's contribution.

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[33] C. Darwin, in N. Barlow (ed.), *The Autobiography of Charles Darwin* (London: Collins, 1958), pp. 103-104. Another example of Brown's lack of professional generosity toward a scientific colleague may be found in Albert E. Gunther, *A Century of Zoology at the British Museum* (London: Dawsons, 1974), p. 156.

Owen, having apparently agreed to give Paget due credit, proceeded to do so in a manner that was at best niggardly. In the introduction to his classic description of *T. spiralis*, he writes with careful restraint. He indicates that when Wormald (the Demonstrator of Anatomy at St. Bartholomew's) informed him that Paget had observed whitish specks in the muscle of a cadaver, he (Owen) asked for specimens of the muscle; and Wormald promptly obliged. This account does not fit well with a letter from Wormald which was preserved among the Owen papers and which reads "Dear Owen,—I send you some sort of organized beings, as I believe, which occupy the muscles of a subject now under dissection at St. B.H., and as I know you are a keen hand for parasitical things from crabs downwards, I send the enclosed for your inspection."[34] This clearly implies that it was Wormald's idea to send Owen the specimens because of Owen's interest in "parasitical things." It is evident that Wormald knew that Paget had discovered the *parasitic nature* of the specks and lost no time in doing Owen an unsolicited favor.[35]

Owen's introductory passage ends with a reference to a footnote explaining that "the existence of the *Entozoon* was at the same time satisfactorily determined by Mr. Paget, with the assistance of Mr. Brown and

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[34] Richard Owen, (ed.), *The Life of Richard Owen* (London: Murray, 1894, 1895). It is extraordinary that in this 2-volume biography, Owen's grandson gives an account of the *T. spiralis* discovery with no mention of Paget. Paget, despite his life-long association and friendship with Owen, is not even listed in the Index. Owen *grandpère* had apparently succeeded, in some quarters at least, in taking full credit for the discovery of the worm. For a further example of the naiveté of the Rev. Mr. Owen's biography of Sir Richard, see J. H. Brooke, "Richard Owen, William Whewell and the *Vestiges*," *Brit. J. Hist. Sci.*, 1977, *10:* 132-145. It is hardly surprising that Rohrer, using this biography and Mrs. Owen's diaries as source materials, described Owen as "a most genial, kind-hearted man," and said of him "Professor Owen was one of the most affable of men. His home life was ideal. In scientific circles he was universally loved and respected. Even those whose views ran counter to his own always dealt with him with the highest consideration. His earnestness of purpose, his sincerity and frankness, were marked traits of his character." (C. W. G. Rohrer, "Sir Richard Owen, his life and work," *Bull. Johns Hopkins Hosp.*, 1911, *22:* 133-139). It would be hard to imagine a statement more at variance with Owen's general reputation.

[35] Paget not only thought that Wormald disliked him (footnote 25) but thought that Wormald also disliked Stanley (who encouraged Paget to publish) and disliked Lawrence (who admitted to St. Bartholomew's Hospital the second case in which *T. spiralis* was found); Paget, *Memoirs*, p. 50. These antipathies (except where they involved Lawrence) may have had considerable bearing both on Wormald's submission of specimens to Owen and on the fact that Paget was dissuaded from publishing.

Mr. John Bennett, at the British Museum." The phrases "at the same time" and "satisfactorily determined" seem carefully chosen to avoid saying that Paget had discovered the entozoon (internal parasite) first. Later in the paper, however, Owen refers to Paget "who first noticed the parasites in the Italian . . ." I believe this is the only time Owen explicitly acknowledged Paget's priority.[36] Owen thus fulfilled the letter but not the spirit of his obligation to Paget. Later he was even less generous; Pagenstecher called attention to the fact that Owen, in a subsequent article in Todd's *Encyclopedia*, named himself the discoverer and kept quiet about Paget.[37]

Owen's paper bears the notation "Communicated February 24, 1835." It contains, in addition to the account of the first case, a brief comment on the second case—the Irish woman who died on February 20. Furthermore, the paper appeared in the 1835 volume of *Transactions of the Zoological Society* with an appendix describing *T. spiralis* in a third case, and dated November 18 of the same year. Evidence that this is the date on which his microscopical observations were actually made crops up in a most unexpected quarter. His wife's diary for November 18, 1835 states "Richard spent the evening in examining some of the minute worms found in the muscles of a man. . . . I could not get over the smell of the decaying piece of muscle for hours."[38] Again Owen lost no time in putting his observations on record!

Owen, like Paget in due course, was a champion of the use of microscopy; just 4 years after the discovery of *Trichinella*, he was to become the first President of the Microscopical Society of London, now the Royal Microscopical Society. For his studies on the first case of trichinosis, Owen, like Paget, made use of a simple, rather than a compound microscope; but unlike Paget, Owen had access to lenses of high resolution. In his classic description of the parasite, he makes several references to lenses and magnifications that he used. He remarks that a power "of an inch focus" is enough to show the curled up worm. A simple microscope with a focal length of 1 inch would give a magnification of 10X or 11X.[39]

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[36] The third-person version of the incident (*Proc. Zool. Soc. London*, 1835, Part 3, 23-27) reveals a similar convoluted style and is undoubtedly the work of Owen himself. It is stated that the muscle specks were noticed by Paget, who suspected them of being of parasitic origin. This is followed by the statement "the suspicion was found to be correct"—but with no acknowledgment that it was Paget who found it to be so. As in the first-person version (*Transactions* of the same society) there is a later reference to Paget "who first observed the worms in the Italian."

[37] Cited in Cobbold, "Discovery of Trichina," 255.

[38] Owen, *Life of Richard Owen*, vol. 1, p. 91.

[39] B. K. Johnson, *Optics and Optical Instruments* (New York: Dover Publications, 1960), p. 80.

On the following page, Owen mentioned additional detail seen with a power of ½ inch focus—which indicates a magnification of 20X to 21X. This is in accord with the legends to Owen's Figures 2, 3, 4, and 9, which specify a magnification of 20X. Owen's Figure 5 represents a magnification of 200X, while Figures 6 to 8 represent 300X and specifically refer to the appearance of the organism as seen through a Wollaston's doublet.[40] (It is curious that the legend for Figure 5 does not refer to this instrument, suggesting perhaps the use of some other high-powered simple microscope.)

Owen thus appears to have had the use of microscopes of high quality. It is not clear whether he owned a microscope. At the time of the *Trichinella* discovery, he had spent some 8 years trying to persuade his prospective mother-in-law that his financial position was sound, and he was probably practicing rigorous economy. If he had a good microscope of his own, he did not use it for his demonstration of *T. spiralis* at the meeting of the Zoological Society of London on February 24; a microscope belonging to "Mr. Prichard" was used.[41] This was undoubtedly Andrew Prichard, so it is possible that the first public demonstration of *T. spiralis* was accomplished with a diamond lens. By the end of the year, Owen, now married, apparently did some of his microscopy at home though it is still not clear whether the instrument he used was his own.[42]

The original drawings for many of Owen's papers (not all by his own hand) are preserved in the Library of the British Museum (Natural History), where he spent the final portion of his career. One of the 520 folios of drawings (Folio 70) contains three sheets of *Trichinella* drawings. One (Sheet J) bears the set of nine drawings (initialed by Owen) used to illustrate Owen's 1835 paper in the *Transactions of the Zoological Society of London* (for which magnifications have been cited above). Sheet E, (also apparently by his own hand) bears a set of seven drawings (Figure 7) not hitherto published. It bears the title "Original Drawings made in February, 1835"—written in ink and probably added by Owen at a later date. These drawings are remarkable in that some of them would seem to be

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[40] Wollaston's doublet, as originally introduced in 1812, consisted of two plano-convex lenses with their plane surfaces closely applied to each other but separated by a diaphragm (thereby reducing spherical aberration, but paying the penalty of reduced aperture size). This doublet was improved by various workers, including Wollaston, eventually evolving into a triplet with little chromatic aberration. A Wollaston doublet made by Dolland of London in 1835, was tested in the present century and found to give a magnification of 200X and a resolution of 6 microns, while another gave a magnification of 300X and a resolution of 5 microns (cited in Bradbury, *Evolution of the Microscope*, p. 102).

[41] Owen, "Microscopic entozoon," version in *Proc. Zool. Soc. London*, 27.

[42] See reference above to Mrs. Owen's diary, and footnote 38.

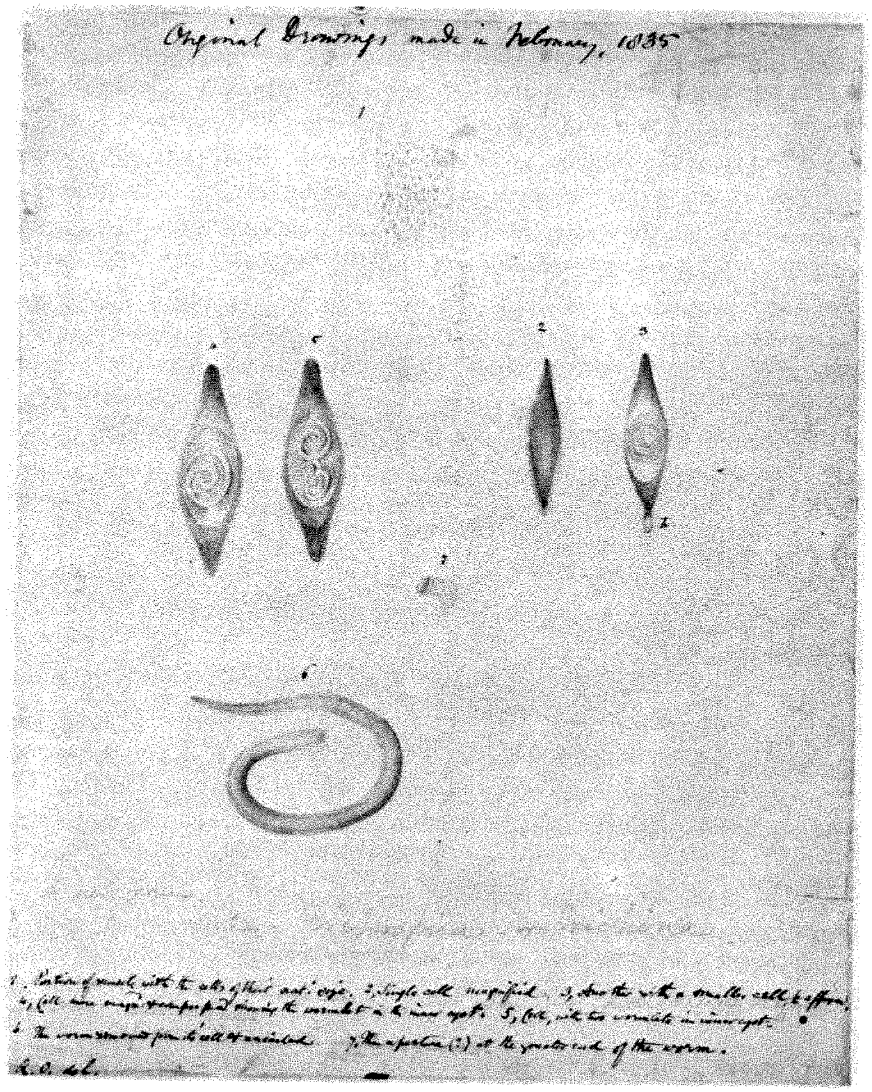
Original Drawings, made in February, 1835
1
4
5
2
3
6
7
6

Figure 7. Richard Owen's unpublished drawings of *T. spiralis*. Note the generic name *Trichospira*, which Owen apparently considered but abandoned.

more accurate representations of the appearance of encysted *T. spiralis* than those actually published (Figure 8). Sheet E is also of interest in that it reveals that Owen initially intended to name the new genus *Trichospira*. Had he done so, the name would have survived as the generic name; (it was applied to a genus of ciliate protozoa in 1899). Sheet F bears a sketch

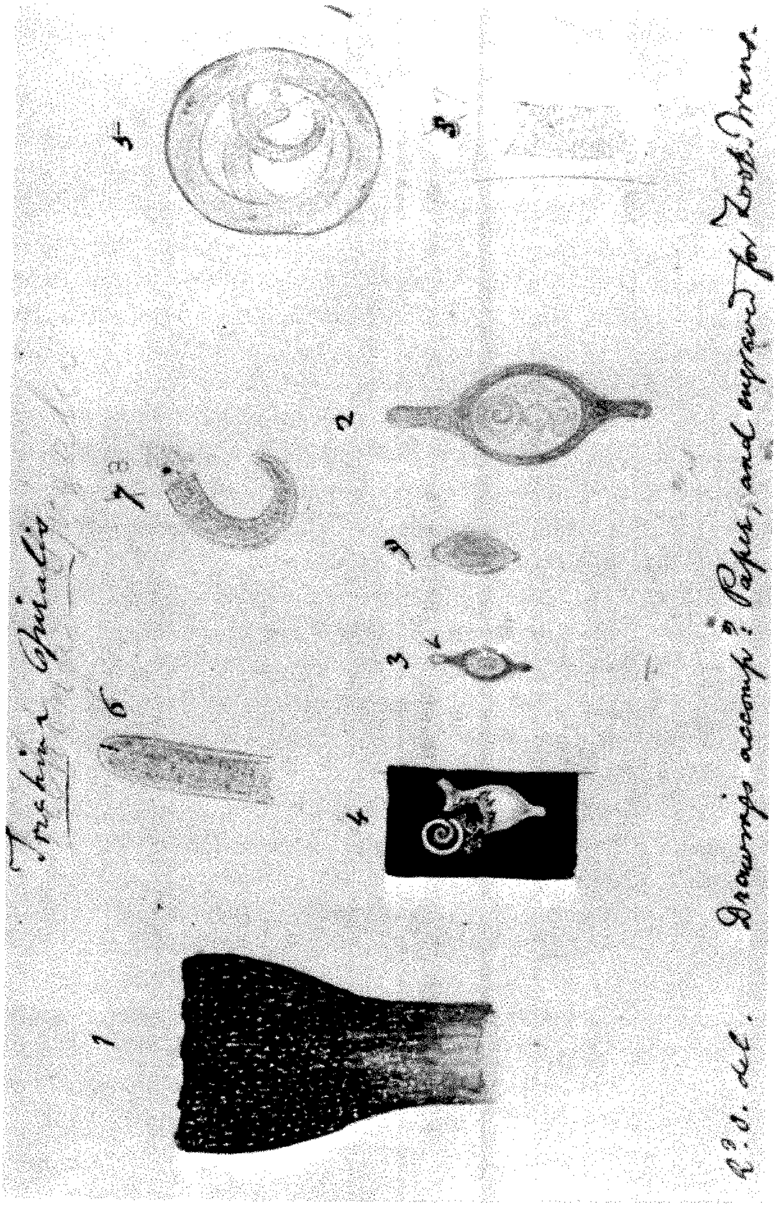
Trichina Spiralis
1
6
7
5
2
9
3
4
8
R.O. del. Drawings accomp.? Paper, and engraved for Zool. Trans.

Figure 8. Drawings used to illustrate Owen's published description of *T. spiralis*. The numbers of the drawings differ somewhat from those in the published plate.

by James Paget, virtually identical to one preserved in the Library of the Royal College of Surgeons of England, and reproduced here as Figure 4. The legend, too, in Paget's hand, is almost identical to the legend on the copy at the Royal College of Surgeons. It seems reasonable to postulate that this sketch came into Owen's possession during Paget's efforts to ensure that Owen would acknowledge his contribution (*vide supra*). Folio 70 also contains a sheet (Sheet M) without drawings but with two notations. One is the statement, evidently referring to the sketch on Sheet F: "the inclosed (sic) drawing was made by Mr. Paget from the microscopic demonstrations by Jos Bennett, Esq. Assistant in Botanical Department British Museum assisted and confirmed by Robert Brown, Frs, under the simple botanical microscope."[43] It is curious that Owen here attributed the microscopical accomplishment to Brown's assistant, assisted by Brown. Paget gave the credit to Brown himself.

In terms of microscopical skill, Owen's examination of *T. spiralis* was probably surpassed by the virtually simultaneous examination made by Arthur Farre. Farre, too, was a faculty member at St. Bartholomew's, being the Lecturer in Botany and therefore an important mentor of young physicians who would have to rely on herbal remedies. Indeed Farre was almost as well placed as Owen to take advantage of young Paget's discovery of the worms in the flesh of Mr. Bianchi. Farre was in the chair at the meeting of the Abernethian Society at which Paget described his discovery of four days earlier. Owen recorded that he preserved the muscle specimens for three days before examining them, so it is quite likely that Farre made his study of the worm as early as, or even earlier than, Owen made his. Farre, like Owen, also made observations on worms from the next two cases (the dissections made on or about February 20 and November 18, 1835). Farre, however, was of a different temperament. He did not rush into print so precipitously as did Owen; he was not the first to see the worm nor the first to describe it, and has not been acclaimed a major figure in the story of trichinosis.

Farre's description of *T. spiralis* was written (at least dated) December 2, 1835, and appeared in the Saturday, December 5 issue of the *London Medical Gazette*.[44] It included three camera lucida drawings representing magnifications of 200 to 450X. Unlike Owen, Farre distinguished what he tentatively took to be a free-floating gut, and concluded that if this interpretation were confirmed, *T. spiralis* could be classified with the cavitous rather than the parenchymatous worms. Farre recommended the use of lenses of ½ or ¼ inch focal length for dissecting the worms out of their cysts by means of needles; they should then be covered with a cover slip of talc and examined at 200 to 500X; he wisely recommended fresh preparations (ringed with white paint to prevent evaporation) rather than dehydrated specimens mounted in balsam. One of the most notable achievements of Farre's study was his observation of the cluster of granules now known as Farre's Body. He reported that he examined it at a magnification of 1000X, but unfortunately he did not say how he achieved this very high magnification. Farre, Paget and Owen remained friends, and dined and sang (with great decorum, no doubt) at Paget's home more than 40 years later.[45]

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[43] The other notation is a key or legend to a set of four drawings of "Trichospira" within and without its cyst. This key does not exactly match the drawings on Sheet E or Sheet J, and probably represents a draft that was rendered inaccurate by subsequent rearrangement of the drawings.

[44] A. Farre, "Observations on the Trichina spiralis," *London Med. Gaz.*, 1835, *17:* 382-387.

A report that is frequently omitted from discussion of the discovery of the parasite, is that of Wood.[46] Henry Wood, a practitioner of Bristol, England, is rightly credited with the first tentative association between *T. spiralis* and disease in man (a proposition dramatically proven by the magnificent work of Zenker 25 years later). Wood may, however, actually have observed the worms in October 1834—four months prior to Paget's observation. Writing on April 29, 1835, and having commented on the gross appearance of the muscles in the cadaver in question, Wood says ". . . with regard to the animals themselves, although my manipulation was not at that time sufficiently skillful for the dissection of the cysts, yet I observed sufficient from inspection with some tolerably good microscopes, to be enabled to establish from their external characters their identity with the species described by Mr. Owen." Clearly Wood means a retrospective identification, made possible by Owen's report (which had just appeared in the same journal) but the text suggests that the identification may well have been based on Wood's recollection of the appearance of the worms rather than the cysts. This was apparently the interpretation of Rohrer[47] who referred to the discovery of *T. spiralis* as having occurred in October 1834, and of Bett[48] who reported that Wood "studied the structure of the parasite." Wood adds that he was foiled ". . . from the want of proper value being set on the microscope as a means of pathological research." One must conclude that in terms of scientific priority for the discovery of *T. spiralis,* Wood may also have been foiled by the tardiness of his report and the ambiguity of his writing.

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[45] Paget, *Memoirs*, p. 287. Owen's friendship with Paget is also borne out by Paget's visit to the dying Owen on August 30, 1892, and by an exchange of cordial letters. Professor Jacob Gruber, Temple University, Philadelphia, informs me that some two dozen non-scientific letters from Paget to Owen are extant.

[46] H. Wood, "Observation on the *Trichina spiralis*," *London Med. Gaz.*, 1835, *16*: 190-191.

[47] C. W. G. Rohrer, "Sir Richard Owen, his life and work," *Bull. Johns Hopkins Hosp.*, 1911, *22*: 1-19.

[48] Bett, "*Trichina spiralis*," p. 41.

It was the nature, not the appearance, of the minute muscle cysts that was the substance of Paget's discovery. It was immediately appreciated that they had been seen often enough before; and much needless debate has been devoted to the question of who saw them first. Discovery of the infection (as distinct from discovery of the worm) is in fact often credited to various observers who reported specks, granules, or spicules in the muscles of cadavers. Such observations were made in the 1820s and early 1830s by Tiedemann, Peacock, Klencke and Hilton—and doubtless by countless earlier anonymous observers. Hilton took the objects to be minute cysticerci (not then known to be tapeworm larvae) and his colleagues in London later had no doubt that they were *T. spiralis* cysts. Peacock preserved a dried portion of affected muscle; but even in that instance there seems to be no unequivocal retrospective confirmation of the presence of the parasite. In the absence of such confirmation, no amount of argument over relative size or erroneous measurement can resolve the question of whether the objects seen by these observers were the cysts of *T. spiralis*. The debate over the priority of such reports seems a singularly unprofitable exercise.

Retrospective diagnosis of trichinosis, based entirely on circumstantial clinical evidence and without even the observation of extraneous objects in muscle, has the advantage of being pure speculation, untrammeled by pathognomonic evidence. Several such imaginative conceits (all the more fanciful because of the notorious clinical similarity between trichinosis and various other diseases) were put forth about a century ago, when outbreaks of trichinosis were first attracting medical attention.[49] A recent addition, proffered with a boldness bordering on the foolhardy, has been submitted by Gutt.[50] He calls attention to a 13th-century account of a serious illness which Gutt declares to have been trichinosis, acquired by a family as a result of the ingestion of mutton. Although trichinosis would seem to be one of the less likely explanations of the recorded circumstances, Gutt uses the incident to advance by six centuries the first observation of trichinosis in Europe. None of these speculations in any way affect the status of James Paget and Richard Owen as the first to discover and describe the encysted roundworms in the muscle of man.

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[49] Reviewed in W C. W. Glazier's masterful *Report on trichinae and trichinosis* (Washington, D.C.: U.S. Public Health Service, 1881) p. 212.

[50] R. W. Gutt, "Ein Trichinosefall aus dem 13. Jahrhundert," *Med. Klin.*, 1966, *61*. 1597.

ACKNOWLEDGMENTS

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APPENDIX 1. James Paget's manuscript of February 10, 1835. Transcribed by the author; reproduced by permission of the President and Council of the Royal College of Surgeons of England.

Description of a peculiar Animalcule observed in Human Muscle.

To the Editor of the *London Medical Gazette.*

Sir.
The following circumstances having excited considerable interest, I have at the suggestion of Mr. Stanley, drawn up the subjoined notes, which you will, I hope, deem worthy of insertion in your Journal.

I am Sir
Your obedient Servant

James Paget.

St. Bartholomew's Hospital
February 10th: 1835.

The first case in which the existence of this peculiar animalcule was observed was in the body of an Italian Paulo Bianchi aged 40 who had been admitted into St. Bartholomew's Hospital 2 or 3 months previously under the care of Dr. Roupell, with slight cough with purulent expectoration, profuse diarrhoea, oedema of the lower extremities and great debility. At the time of his admission, the urine which he passed in very large quantities was albuminous, and it continued so in a slighter degree till his death which took place on the 30th of January. While he was in the Hospital, the dropsy decreased and the cough and expectoration remained very slight, but the diarrhoea continued with great obstinacy, and gradually exhausted him.

At the Post Mortem examination, both lungs were found to contain tubercles in various states, and in the right were 3 or 4 cavities of different sizes. The mucous membrane of the lower end of the ileum was ulcerated and the kidneys presented the peculiar appearance particularly described by Dr. Bright.

When the body was being dissected, 3 days after death, immediately on reflecting the integuments there were observed scattered over the muscles an immense number of minute whitish specks. On closer examination with the microscope, these were found to be cysts containing small worms as represented in the accompanying drawing. Each cyst is of an elliptical shape pointed at the extremities, about 1/40 of an inch in length, apparently closed at all points, and lying in the cellular tissue connecting the muscular fibers, to which it is closely connected. Within it, is contained another of an oval or circular form, the substance by which they are united being opaque and more dense at the extremities than at the sides. In this latter cell is the worm, which is about 1/25 of an inch in length and lies coiled up in a spiral form. When removed from its cell in which it seems to float loosely in a clear fluid, it is found to be thread shaped, bluntly rounded at both ends, but tapering toward that which appears to be the head, and which lies at the outside of the coil. Its organization appears to be of the most simple description. At the larger extremity is a linear opening which communicates with a simple canal running along the whole length of the body. No appearance of fibers either longitudl. or circular, can be detected though from the movements observed in the living animal the former must necessarily exist. In a fresh specimen when carefully taken out of its cell, it may be seen to uncoil and uncoil [sic] itself with either more or less rapidity, and when placed in a drop of water will continued for a considerable time to move the smaller extremity in different directions. Its coats are perfectly transparent, and through them may be seen two lines running along the axis of the body, marking probably the outlines of the intestinal canal, while toward the tail 4 or 5 lines are seen crossing the space between them transversely.

Nearly all the specimens examined presented the above characters—in some cases however two worms were enclosed in the same cell, one lying at each end of the inner cavity, and touching or overlapping each other in the middle. In a few others the worm instead of being coiled up spirally, was in the form of a figure of 8. In some, [there?] was attached to one [extremity?]. There were found too occasionally small opaque bodies closely resembling cells but not containing any worms. None were in a state of further development, very few cells were found empty, and no worms were detected out of the cysts.

They were abundantly distributed in all the muscles of the body; as well in the diaphragm, intercostals and those most deeply seated as in the superficial ones, and not less numerously in the substance than on the surface of them all. Those in which they were most thickly set were the pectoralis major, latissimus dorsi, and sartorius, and some idea may be given of their number by stating that in a space of ¼ of an inch square on the last named muscle upwards of 20 were counted. They all lay with their longer diameters parallel to the direction of the muscular fibers, which seemed themselves perfectly healthy. None could be found in any of the other tissues of the body, nor did the blood which was carefully examined present any unusual appearance.

The genus to which this species (as far as its organization has been at present observed) approaches nearest in character is that described by Zeder,*[51] under the name of Capsularia, as "an acicular round worm, rather slender anteriorly, enveloped in a proper capsule, blunt at both ends, with a divided intestinal canal, and a fine blunt little hook." "The worms of this Genus" he says "live like Hermits each in its own peculiar cell. They lie coiled up on the liver to which they are attached by fine filaments. The membranes are with the worm flattened & compressed. The body is hard and very elastic, rounded at both ends. The tail is more blunt than the head, and furnished with a short and blunt hook." He includes two species in it, one found in the Herring (C. Halecis), the other in the Salmon (C. Salaris), and with the exception of the minute hook at the tail the drawings which he has given have a very great similarity to the present species. There can be little doubt that the appearance of the muscles described by Mr. Hilton at the Med. Chir. Society, and published in the Medical Gazette for February 1833 was owing to the presence of cysts similar, or at least analogous to the above. (The organization of these worms however, differs materially from that of the Cysticerci to which that was ascribed). Their occurrence indeed appears by no means uncommon, having been observed many times in the dissecting room at St. Bartholomew's, but hitherto regarded as spicules of bones deposited among the muscular fibers. Preparations exhibiting the appearances described have been deposited in the Museum of the Hospital.

APPENDIX 2. Letter from James A. Paget to Charles I. Paget, February 11, 1835.[52] Transcribed by the author; reproduced by permission of the Council and the President of the Royal College of Surgeons of England.

February 11th 1835
Thavies Inn. 12

Dear Charles,

You will I think be interested in learning that I have lately discovered a perfectly new animalcule, infesting in myriads the human muscles, *during life*—little worms about 1/30 of an inch long coiled up in minute cells as you see in the drawing which I have sent with this. I made out clearly their intestines and have measured all their dimensions—and the account is to be published either in the Transactions of the Zoological or of the Medico-Chirurgical Society. I do not yet know whether I shall write the description myself, or whether Mr. Owen our lecturer on Comparative Anatomy will do it—I should rather think the latter, as he having used far more powerful microscopes than I had, has been able to make out their organization more clearly. Whichever be the case, I have taken care that I should receive at least some credit for the discovery, though this was not to be had without some trouble.

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[51] *Erster Nachtrag zur Naturgeschichte der Eingeweidewürmer von I. A. E. Goeze, mit Zusätzen und Anmerkungen herausagegeben von I. G.H. Zeder. [First supplement to *Natural History of Intestinal Worms* by I. A E. Goeze, with additions and annotations edited by I. G. H. Zeder.]

[52] James Paget lived with Charles at 9 Charlotte St., Bloomsbury (London) from October 1834 until Charles left London for Cambridge after Christmas—at which time James moved into lodgings with his friend Johnstone at Thavies Inn. It was from this address that the letters of February 11 and February 25, 1835 were written. It is not certain which of the sketches now in the Royal College of Surgeons, if any, is the "drawing" that accompanied this letter. The Kirby mentioned in the penultimate paragraph may be the Rev. Mr. Wm. Kirby, naturalist and author of one of the Bridgewater Treatises. Presumably the Skill mentioned in the post-script is Mr F. Skill, publisher of the book that the Paget brothers had written; see footnote 53.

This occurrence is by no means uncommon having been observed in several cases in the dissecting rooms, but overlooked or mistaken for little bits of bone—the fact of this occurrence is itself interesting and from their immense numbers may prove important when more cases have been found and compared, so as to see whether they accompany any particular disease. The present was a case of consumption. Fancy the body of single individual supporting more separately existing creatures than the population of the whole world—and there must in this subject have been 10 times as many. However you shall see the paper as soon as it is published.

I have already reaped some of the benefits of the discovery in a favarable [sic] introduction to Brown—*the* Brown who alone of the whole world of that name who [sic] would be known without the adjunct of some Christian appellation—the best botanist perhaps in the world. He was remarkably kind and lent me his microscope etc. Mr. Children too I saw about it, and made my peace with him, not having called on him before having rather lowered me in his estimation. I have obtained by it too an introduction to Mr. Langstaff, who has the best anatomical & surgical (private) museum in England, and he has invited me to see it some day this week. Mr. Kirby too will be up in London soon and he is to see them—all this looks like making progress in *something* at least and I hope may in time bring more tangible fruits.

We were at Rockwell's last night. He is as you know married and grown immensely serious—giving his parishioners a tremendous blowup last Sunday which he says has produced already marvellously good effects. His wife is rather good-looking and sings well. But this is only the second of some half dozen letters which I must write this evening, so I must be

Yours very affectionately

James Paget

P.S. wh. ought to have been written first—

I took your note to Mr. Davis—agree [passionly?] with you as to the plan to be used with Skill—congratulate you even at the [expense of someone?] at the expulsion of Hollis, whose physiognomy will always [serve?] me as a standard for that indication of villainy.

APPENDIX 3. Letter from James A. Paget to Charles I. Paget, February 25, 1835.[53] Transcribed by the author; reproduced by permission of the President and Council of the Royal College of Surgeons of England.

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[53] In the penultimate paragraph, "our Book" refers to: *A sketch of the Natural History of Yarmouth*

12 Thavies Inn
February 25, 1835

My dear Charles,

I have sent you a portion of muscle containing some of the animalcules which I discovered and which were last night baptized under the name of Trichina spiralis at the Zoological Society by Mr. Owen. You may see these pretty clearly with your treble magnifying glass holding them up to a strong light at least I could some days ago with a microscope of not much more power. I think I have done rightly in not myself publishing this account for the folln. among many reasons. It is a subject with which I was previously entirely unacquainted, and I might very easily have fallen into error as to the affinities of the species—as well as to their peculiar structures, in consequence of the extremely high powers which their minuteness required to exhibit all their parts, and the numerous [. . .] appearances wh. these microscopes give rise to. I should probably have been obliged to send it to some [minor?] periodical, or the Society at which the description might have been read, would not have printed it in their earliest transactions, giving preference to papers by members. Besides the subject, prima facie, comes so near the marvellous that it required some good name to authenticate it to prevent its being (as was the case with the former description poor as it was that was given) utterly disbelieved—I might have been embroiled too in a useless dispute as to its minute structure, which every microscope [give?] a different appearance to, and which is therefore so unsettled that I should not be surprized to see two or three other descriptions in a month or two.

These are some of my reasons for giving up all formal responsibility on the subject—you may add perhaps, self interest, [wh. ?] said that it would in the end be best not to stand too forward, but I fear not modesty, about whose existence in me, you all seem to be alarmed—I am sure many would say quite uselessly. I am very well contented that in the papers wh. will probably be published in the Transactions of May, I shall be mentioned as the first observer of their existence—wh. is indeed all I can fairly claim, a dozen others having seen their structure *afterwards,* some even sooner than myself that I have gained considerable kudos in the Hospital & elsewhere by it and [now?] stand perfectly well with all parties. Besides really the subject is yet most incomplete—they are indeed described as constituting a new order of Entozoa—but it is very uncertain whether they do not belong to a genus commonly found in plants i.e. Vibrio—it remains to be seen too whether they occur in connection with any particular condition of body—whether they are peculiar to man, or whether analogous species may not occur in other animals—these and 50 other such points can only be determined by separated and continued observations, wh. you may be sure I shall lose no opportunity of making. You may assist me too, by looking whenever you can at the muscles (the lean that is) of diff. animals, especially those that have died of

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and its neighbourhood, containing Catalogues of the Species of Animals, Birds, Reptiles, Fish, Insects, and Plants, at present known. **By C. J. and James Paget. (Yarmouth: F. Skill, 1834). It listed 1185 species of plants and 766 insects, to say nothing of other fauna, and sold for half-a-crown.**

disease—they look like little specks of fine sand sprinkled on the flesh. Mr. [Corteston?] might also look for them in any body he may be examining—they occur in especial abundance in the muscles covering the chest so that he could find them without at all mutilating the subject by merely turning the skin aside for an inch or two. Either [he?], or Dr. Cox, would do this I am sure if you ask them from me. I have no doubt they exist very commonly having already found them in another subject, wh. was dissected last week and where they were just as abundant as in the first. Should you or they find them I should like if possible to have the history of the case during life.

You shall see the description as soon as published—in the meantime you will of course take care of the specimen I send. I shall try and preserve a good many more though want of time hinders me immensely, especially as I have not even a common magnifying glass to help me, but am obliged to work with the naked eye wh. is most painful. This has indeed been another disadvantage under which I have laboured—however if perseverance will succeed in bringing me out from amongst the crowd I wont be always amongst them. One discovery though, [. . .] not enough—there must I fear be a frequent repetition of such things, so as to keep constantly before the public before they will give you even fair play.

This slight occurrence has given me more insight into the ways of the world in this respect than I would ever have learned by hearsay—but I congratulate myself in having been at least even with them all.

You will be glad to hear that I received a very laudatory account of our Book from Mr. Garreth, who was President last night and who is now publishing a work on Fish, in the same style as Bewicks with vignettes etc—he said he had found it extremely useful as it noticed the fish of almost the only part of the Coast which he had not been able to visit—this is not the only instance in wh. I have lately been grateful about it—even Mr. Brown knew of it, and praised it. This looks like progressing.

But it is getting very late. Will you send me by the next parcel (on Saturday I think) from the Public Library [Thompson?] on Heat & Electricity—it shall be returned by the stipulated time—on no account forget this.

Yours very truly,

James Paget

"BUILD! BUILD!" THE CONTROVERSY OVER THE CARE OF THE CHRONICALLY INSANE IN ENGLAND, 1855-1870

PETER McCANDLESS

"Our whole scheme for the cure of lunatics has utterly broken down."[1] This was the pessimistic conclusion of Dr. Andrew Wynter, writing in 1870 on the state of England's public asylums. His judgment typified a growing dissatisfaction with institutions which a few years before had been widely hailed as the solution to the problem of insanity. In the name of humanity, medical progress, and social expediency, lunacy reformers had campaigned for the creation of public asylums for the nation's pauper lunatics. In 1845 Parliament had responded by passing two acts which established the principle of state responsibility for the insane. One act set up a national lunacy commission to inspect and regulate English and Welsh asylums. The other compelled the county and borough governments to erect public asylums for the care of their pauper lunatics.[2] These two acts, known as Ashley's Acts after their sponsor, Lord Ashley, laid the foundations of the modern asylum system.[3]

The passage of Ashley's Acts ushered in a period of optimism in regard to the treatment of the insane. In the thirty years prior to 1845 the scattered efforts of a small number of philanthropists and medical men had brought about striking improvements in the condition of asylums and the care of patients. With the powers and resources of the state now behind the movement it is little wonder that most lunacy reformers faced the future with confidence. Their expectations were perhaps best expressed by the lunacy commissioners in 1847: "The present humane method of treating the Insane, and the provision made, at the public cost, for Pauper

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[1] Andrew Wynter, "Non-restraint in the treatment of the insane," *Edinburgh Rev* , 1870, *131*. 437

[2] 8 & 9 Vict. c.100 and 126.

[3] Anthony Ashley Cooper, later Seventh Earl of Shaftesbury, one of the preeminent philanthropists of the Victorian era Although he is best remembered for his efforts to improve conditions in mines and factories, lunacy reform was his first and most constant interest. Between 1828 and 1845 he served as a member of the Metropolitan Commissioners in Lunacy, a body Parliament created in 1828 to license and inspect the private madhouses of the London area. During most of that time he was the Commission's chairman In 1845 he became chairman of the National Lunacy Commission, a post he held until his death forty years later See Edwin Hodder, *The Life and Work of the Seventh Earl of Shaftesbury,* 2 vols (London, 1886)

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Lunatics, of Asylums furnished with every resource for promoting health and comfort . . . promise to diminish the numbers of the permanently Insane, [and] cannot fail to alleviate, in a great degree, the sufferings of that most afflicted class of human beings."[4]

Yet in less than fifteen years many persons were expressing doubts about the efficacy of the public asylums. No one denied their advantages. Confining the insane in large central institutions made it easy to supervise their care and thus to protect both them and society from the consequences of their actions. These were important considerations and strong arguments in favor of the new system. But there was something else to be considered: did the asylums actually "cure" anybody? One of the main arguments lunacy reformers had used to gain support for asylym treatment was that it would produce high recovery rates—up to 90% according to some predictions.[5] By the 1860s reformers were forced to admit that such claims had been wildly optimistic. Statistics showed that patients seldom left the public asylums cured; indeed, they seldom left at all.[6]

The lack of cures produced other problems, such as overcrowding. The new asylums hardly opened before they were filled with more or less permanent residents. Asylum authorities responded by enlarging the buildings or erecting new ones—to no avail. No sooner was new accommodation created than it was occupied, and yet there was nearly always a backlog of patients in the workhouses or at home who could not obtain admission.[7]

As the asylums grew larger and more crowded, they also presented greater administrative problems. Medical superintendents became more concerned with paperwork than treating their patients. Individual treatment gave way to a system of "routine and general discipline" designed merely to keep the institution running in an orderly and efficient manner. The machine-like discipline of many asylums invited comparison to prisons and workhouses, and such comparisons were not unusual. One visitor to the Middlesex County Asylum at Colney Hatch reported that many patients had asked him "what crime they had committed to be shut up in prison?"[8]

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[4] Report of the Commissioners in Lunacy to the Lord Chancellor, *Parliamentary Papers* (hereinafter referred to as *PP*), 1847, XXXIII, pp. 230-231.

[5] G. M. Burrows, *An Inquiry into Certain Errors Relative to Insanity* (London, 1820), pp. 17, 48-51; "Report on the treatment of lunatics," *Quarterly Rev.*, 1844, *74:* 427-428; "Lunatic asylums," *Westminster Rev.*, 1845, *43:* 90 (this is the New York ed.); *Parliamentary Debates*, July 23, 1844, 3d ser., *76:* 1263-1264.

[6] In 1867 the Commissioners in Lunacy reported that 90% of the patients in the public asylums were thought to be incurable. Twenty-first report of the Commissioners, *PP*, 1867, XVIII, p. 62. There seems no reason to dwell on the recovery statistics of the various asylums, as no standard definition existed as to what constituted a "cure." For a discussion of this problem, see William L. Parry-Jones, *The Trade in Lunacy* (London: Routledge & Kegan Paul, 1972), pp. 198-206.

[7] See Eleventh report of the Commissioners in Lunacy, *PP*, 1857, XVI, p. 14; Forbes Winslow, "Pauper lunacy," *J. Psychol. Med.* (London), 1859, *12.* 342; Nominal return of the county and borough lunatic asylums of England and Wales, *PP*, 1877, LXIV, pp. 657-673.

Reformers were understandably dismayed by these developments. The institutions they had expected to function as hospitals for the cure of insanity had degenerated into mammoth "lunatic warehouses." Why this had occurred was a hotly debated question. The asylum authorities generally blamed the poor law officials and the patients' families for committing persons who could not benefit from asylum care.[9] The poor law officials retorted that the asylums were at fault for refusing to release "harmless incurable" cases to make room for "curable" ones.[10] The lunacy commissioners at one time or another blamed nearly everyone but themselves, although their own directives in regard to admission of patients were often confusing and contradictory.[11]

It appears that the failure of the asylums as curative institutions was largely a result of their success in achieving their other objectives. Their advocates had promoted the idea that the bulk of the insane would be best off in such establishments. The lunacy laws reinforced this belief by requiring the commitment of all persons "proper to be confined"—without clearly delineating who these persons were.[12] The Poor Law Act of 1834 added to the confusion by prohibiting the detention of "dangerous" lunatics in workhouses for more than fourteen days.[13] This seemed simple enough, but many alienists contended that all the insane were potentially dangerous and thus proper objects for asylums.[14] Inevitably, the public asylums were overwhelmed by patients who by their very nature were "incurable." They included the mentally retarded, the senile, epileptics, and advanced syphilitics. Many of those closest to the problem were perfectly aware of the connection between commitment policies and the custodial character of the public asylums. As early as 1855 Dr. J. C. Bucknill, superintendent of Devon County Asylum, wrote:

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[8] John Arlidge, *On the State of Lunacy* (London, 1859), p. 104; Wynter, "Non-restraint," 432; L.W., "De Lunático," *Temple Bar*, 1862, *5:* 528-541; *Lancet*, 18 July 1857, 62; 11 Aug. 1860, 141.

[9] "The increase of lunacy," *North British Rev.*, 1869, *50:* 156; J. H. Stallard, "Pauper lunatics and their treatment," *Trans. Nat. Ass Promotion Soc. Sci.*, 1869 (London, 1870), 469-470, 476-477; Sir James Clark, *A Memoir of John Conolly* (London, 1869), pp. 93-94; Winslow, "Pauper lunacy," 342; Wynter, "Non-restraint," 418, *Idem*, "Lunatic Asylums," *Quarterly Rev.*, 1857, *101:* 353; J. C Bucknill, "The custody of the insane poor," *J. Ment. Sci.*, 1858, *4.* 463-464; Eleventh report of the Commissioners in Lunacy, p. 15.

[10] Select committee on the care and treatment of lunatics, *PP*, 1859, sess. 1, vol. III, 223, 235; sess. 2, vol. VII, 635, 641, 658, 695.

[11] *Report of the Metropolitan Commissioners in Lunacy*, 1844 (London, 1844), p. 99; Report of the Commissioners in Lunacy, 1847, pp. 259, 278-279; Twentieth report of the Commissioners, *PP*, 1866, XXXII, p. 20.

[12] 9 & 10 Vict. c.5 s.1.

[13] 4 & 5 Wm. IV c.76 s 45.

> At the present day, society neither chooses to incur the danger of monomaniacs at large, nor the disgust inspired by idiots; it insists upon separating from itself these, its imperfect members, partly from motives of true humanity, and partly from selfish motives of fear and outraged sensibility; and the result of a great accumulation of chronic lunatics in asylums, ought not to cause surprise by its amount, nor complaint on account of its expense.[15]

What was to be done with these chronic patients? This was the question of the day, and not only in England. Other nations which had established public asylums found themselves in much the same situation.[16] In England as elsewhere the question produced a variety of answers, some radical, some conservative. No one seriously proposed that the public asylums should simply be abandoned. Even the harshest critics viewed their creation as a progressive step. By the 1860s, however, many lunacy reformers had become convinced that society had become over-zealous in filling the asylums with thousands of patients who could derive no benefit from their costly facilities. Some alternative to the regular asylum needed to be found for these patients.[17]

"Radical" reformers demanded the implementation of some form of community care. They argued that a policy of general confinement did not cure the insane; it merely herded them together into one indiscriminate mass of misery. To subject chronic patients to the monotonous routine of asylum life was unjust and expensive, and robbed these institutions of any pretence to being curative. The best interests of the country, the patients, and the asylums would be served if the chronics were "dispersed" to the community.[18]

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[14] J. C. Bucknill, "The accumulation of chronic lunatics in asylums," *J. Ment. Sci.*, 1855, *1*: 196; Forbes Winslow, "The law of lunacy," *J. Psychol. Med.*, 1850, *3*: 16-17; "Report on the treatment of lunatics," 440-441.

[15] Bucknill, "Ninth report of the Commissioners in Lunacy," *J. Ment. Sci.*, 1855, *2*: 10.

[16] W Lauder Lindsay, "The family system as applied to the treatment of the chronic insane," *J. Ment. Sci.*, 1871, *16*: 498-500; Sir James Coxe, "On the condition of the insane in Scotland," *Trans Nat Ass Promotion Soc. Sci* , 1863 (London, 1864), 219-220. For the U.S. experience, the best guide is Gerald N. Grob, *Mental Institutions in America* (New York: Free Press, 1973), chapter 8.

[17] A parliamentary return of 1867 revealed that over 30% of the chronic patients in the public asylums were considered to be both "quiet and harmless." Some reformers thought the proportion was probably higher. Twenty-first report of the Commissioners in Lunacy, 1867, p. 64; Wynter, "Non-restraint," 437-438; "The increase of lunacy," 130.

The more "conservative" reformers, who included the majority of those directly engaged in the care of the insane, doubted that community care was feasible except on a very limited scale.[19] They believed that the great majority of the insane would have to remain in some form of asylum under the supervision of the lunacy commissioners and the medical superintendents. As an alternative to the existing system, some of these reformers proposed that the asylums could become truly curative institutions if the chronic patients were separated from the curable and placed in other structures associated with the existing asylums.

The controversy over community care was followed closely in the medical periodicals. The alienists' organ, the *Journal of Mental Science,* published the views of both proponents and opponents without taking sides. The journals of the entire medical profession, the *Lancet* and the *British Medical Journal,* generally advocated a program of "dispersal." Indeed, it appears that much of the support for community care came from the non-psychiatric branches of the profession. Dr. Andrew Wynter, editor of the *British Medical Journal* during the first few years of its existence (1858-1860), was one of the most consistent and vociferous advocates of home care. He condemned what he called the "brick and mortar humanity" symbolized by the large public asylums, and argued that treatment of the insane in these institutions was bound to fail: "To drive weak and perverted minds into a crowd, and there keep them as a class apart, is clearly against the teachings of common sense, and is opposed to scientific observation; and to keep them there unnecessarily is a crime."[20]

Two actual examples of community care convinced radical reformers like Wynter that such a policy was feasible. The first was the village of Gheel in Belgium. Since medieval times Belgian families had been sending their mad relations to the shrine of St. Dymphna at Gheel, which was supposed to have a restorative influence on the mentally afflicted. The inhabitants of Gheel and the surrounding countryside had been boarding these pilgrims in their homes for generations. By the nineteenth century the village and its environs had become, in effect, a large lunatic colony.

[18] *Brit. Med. J.,* 1858, 151-152; *Lancet,* 1858, 234-235.

[19] Lindsay, "Family system," 499-500.

[20] Wynter, "Non-restraint," 418, 436-438; *Brit. Med. J* , 1859, 152.

Its existence had been known to British alienists at least since the 1830s. In 1838 W. A. F. Browne, superintendent of Chrichton Royal Asylum at Dumfries, Scotland, had visited Gheel. He had not been impressed. The majority of the insane he saw there were confined to beds, some were in chains, and nearly all were "in the most disgusting state of filth and degradation."[21] In the following years, however, the Belgian government instituted a series of reforms at Gheel. They sent physicians to ensure that the patients received medical care and erected a central hospital where the most troublesome cases could be kept. By the 1850s these improvements had progressed far enough to convince some observers both in Britain and on the Continent that a similar system might be possible elsewhere. The *Lancet* proposed the adoption of the Gheel system in England as early as August 1858; the *British Medical Journal* followed suit a few months later.[22]

The second example of community care was even more significant than Gheel, for it was closer to home. This was the boarding-out system implemented in Scotland at the beginning of the 1860s. Lunacy reform had come later there than in England. Not until 1858 did Parliament pass legislation similar to Ashley's Acts.[23] The adoption of boarding-out in Scotland probably owed something to the timing of this legislation: its passage coincided with the first English attacks on the policy of herding lunatics into large asylums. The influence of the English experience could be seen in an article by W. Lauder Lindsay, medical superintendent of Murray Royal Asylum at Perth. Lindsay cautioned his countrymen against building a series of "Colney Hatches in Scotland,—huge, overgrown, unmanageable establishments whose interior rivals the gloom of a prison." Inspired by Gheel, he urged instead the creation of institutions made up of a number of small scattered buildings "resembling in character the appearance of a large English homestead, or some large industrial community."[24]

It appears, however, that the Scots adopted boarding-out as much out of necessity as for any ideal purpose. In 1858, when the new reforms went into effect, there was very little asylum accommodation available for the insane poor. In order to make the best use of what there was, the Scottish lunacy commissioners frequently urged the parish officers to try to improve the conditions of a pauper lunatic's existence so as to avoid the necessity of immediate removal. Some of these attempts proved fruitless, and the persons in question were ultimately committed. But in many instances there was a significant improvement. The results encouraged the Scottish Lunacy Board to continue the experiment. Dr. Arthur Mitchell, one of the deputy commissioners, later wrote that "*through these forced efforts to ameliorate the condition of the insane at home, a good thing was accomplished . . . a fuller experience was obtained of the extent to which the insane can be properly provided for in private dwellings.*"[25]

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[21] W. A. F. Browne, "Cottage asylums," *Med. Critic and Psychol. J.*, 1861, *2:* 218-219.

[22] *Lancet*, 1858, 235-236; *Brit. Med. J.*, 1859, 152.

[23] David K. Henderson, *The Evolution of Psychiatry in Scotland* (Edinburgh: E. & S. Livingston, 1964), *passim*.

[24] [Lindsay], "The Scottish Lunacy Commission," *North British Rev.*, 1857, *27:* 114-115.

Mitchell, as one might gather, was a strong advocate of boarding-out, as was another member of the Scottish board, Sir James Coxe. They were supported by Dr. (later Sir) John Sibbald, a commissioner of the General Board of Control, the Scottish equivalent of the English Poor Law Board. Both Coxe and Sibbald visited Gheel about 1860. They came away convinced that the system employed there, despite some defects, had sufficient merit to warrant the adoption of a similar plan in Scotland.[26] Scottish boarding-out, however, differed from Gheel in that the lunatics were not collected in one central village but were scattered around the kingdom. Indeed, the majority remained with their own families; only about one-fourth were "farmed out" to persons unrelated to them. All these patients were supported wholly or in part by a grant from their parish. To insure that they were adequately cared for, a deputy lunacy commissioner visited them at least once a quarter. The patients were selected only with the approval of the Lunacy Board, which might commit them at any time if they were being mistreated or neglected, or if it was believed they might benefit from asylum treatment. In a book written in 1864, Mitchell claimed that the efforts of the Lunacy Board had brought about a substantial improvement in the condition of many of these patients, and concluded that boarding-out had "been attended with an unquestionable success." In 1867, 28.5% of the Scottish pauper lunatics were living at home or with other families, a proportion nearly twice as great as that in England.[27]

English advocates of community care frequently pointed to the Scottish experience as positive evidence that such a policy was viable. The Scottish commissioners' reports, J. H. Stallard asserted, provided "undoubted testimony that once brought under supervision it is possible to secure kindly and safe protection for the insane without shutting them up in asylums or doing society any wrong."[28] The *British Medical Journal* voiced similar sentiments and commended the Scottish commissioners for taking "a broader and more expanded view" of the lunacy question than their English counterparts. Andrew Wynter's only complaint was that the Scots had been too timid, and that boarding-out might be extended to a larger class of the insane.[29]

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[25] Arthur Mitchell, *The Insane in Private Dwellings* (Edinburgh, 1864), p. 34.

[26] Henderson, *Psychiatry in Scotland*, p. 98; Sir James Coxe, "A recent visit to Gheel," *Med Critic and Psychol. J* , 1862, *2:* 186; John Sibbald, "The cottage asylum system and Gheel," *J. Ment. Sci.*, 1861, *7:* 42-45, 50-51, 59.

[27] Arthur Mitchell, "The care and treatment of the insane poor," *J. Ment Sci* , 1868, *13:* 472-497; *Idem*, *Insane*, pp. 73-74.

These radicals argued that the adoption of some form of community care in England would benefit the insane and the whole nation in several ways. First, the happiness of many patients would be increased by living in a family as opposed to an institutional environment. Second, they would be granted "that which any one, however low he may have fallen, prizes beyond all else"—his liberty. Third, there would be a decrease in mortality. According to the Scottish reports the mortality of boarded-out patients was lower than that of either the Scottish or English asylums. Fourth, there would be a considerable savings to the nation. Maintaining a lunatic at home was clearly cheaper than keeping him in an asylum. Stallard estimated that England would save about £60,000 a year if it boarded out as large a percentage of its pauper lunatics as Scotland did. Finally, the necessity of building new asylums would be eliminated, while the existing institutions would be improved by the release of patients who could not benefit from them.[30]

Few English alienists were willing to accept these arguments although occasionally one of them came out strongly in favor of community care. One of the earliest such proposals came from Dr. Robert Boyd, superintendent of Somerset County Asylum. Testifying before a Select Committee on Poor Law Medical Relief in 1854, Boyd asserted that "crowding people into asylums, hospitals, or anywhere else" necessarily increased mortality from disease and that the money expended on the construction of asylums would be better spent on improving the homes of the poor.[31]

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[28] Stallard, "Pauper lunatics," 471-472; Henry Maudsley, *The Physiology and Pathology of the Mind* (London, 1868; 1st ed. 1867), pp. 499-500.

[29] *Brit. Med. J.*, 1872, 16; Wynter, "Non-restraint," 444.

[30] Stallard, "Pauper lunatics," 471-473; Maudsley, *Physiology and Pathology*, pp. 496-497, Wynter, "Non-restraint," 438-441.

[31] Select Committee on Poor Law Medical Relief, *PP*, 1854, XII, p. 501.

Henry Maudsley, one of the most eminent English alienists of the late nineteenth century, also advocated a greater use of home care.[32]

These appear to have been the views of a minority. At a meeting of the alienists' organization, the Medico-Psychological Association, in 1862, Dr. Harrington Tuke dismissed a proposal to establish a series of Gheels in England as "perfectly Utopian and absurd." His view was not unusual.[33] After decades of preaching that the home was "generally the worst place that can possibly be found for the sufferer from mental disease," it was difficult for alienists to accept the return of patients to private homes as a positive step. One of the primary reasons for placing lunatics in asylums was to protect them against the mistreatment and neglect they sometimes received from their relatives.[34] Most alienists considered home care no care at all, and they found the home of the poor family particularly objectionable: "In it [the patient] is frequently exposed to the influence of intemperance and fanaticism, of domestic feuds, of scarcity of food, and the constant struggle for existence . . . Such influences cannot fail to affect most prejudicially any patients who have been restored to their homes relieved but still insane, the chronic and so-called harmless lunatics."[35]

Opponents of community care protested that it would lead to the abuse of patients because it would make adequate supervision impossible. Dr. Henry Stevens, medical superintendent of St. Luke's, who visited Gheel in 1858, argued that "the want of proper supervision" was the "great drawback at Gheel, and to any similar plan." The inevitable result would be a resort to mechanical restraints to keep the patients out of trouble. Stevens claimed that he had found about one-tenth of the patients at Gheel under some form of restraint:

> One cannot move one-hundred yards without observing the price at which this so-called liberty is obtained; the helpless, purposeless wandering imbecile is *fettered* like the hedgeside vagrant donkey; straps or irons surround the ankle, and these are united by a strap or chain . . . many suffering from more active madness were seated in chairs to which they were strapped; others roamed about with a

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[32] Maudsley, *Physiology and Pathology*, pp. 499-501.

[33] Discussion of paper read by J. Mundy, "On the cottage asylum system," *J. Ment. Sci.*, 1862, *8:* 329-336; Arlidge, *State of Lunacy*, p. 146; C. L. Robertson, "On the several means of providing for the yearly increase of pauper lunatics," *J Ment. Sci.*, 1865, *10:* 483.

[34] "Life in lunatic asylums," *Eclectic magazine* (New York), 1855, *34:* 291 (orig. appeared in the *London Quarterly Rev.*, 1855, *3*· 457); "Lunatic asylums," 90.

[35] Bucknill, "Chronic lunatics," 197.

strap round their waist, to which their arms were confined by "bracelets" (the polite for handcuffs) . . . [36]

Many alienists objected to the Scottish boarding-out system for similar reasons. The anonymous author of "Gheel in the North," which appeared in the *Journal of Mental Science* in 1865, asserted that the boarded-out patients were frequently mistreated. He claimed to have visited over 200 patients, many of whom were so incapacitated as to be unable to draw much benefit from their freer life. Almost sixty lived in unsuitable housing, a few of them in houses "so foul as to be unhealthy." Four lived with "drunkards" and three with "immoral persons." Some of the lunatics allowed to roam freely had "destructive or erotic tendencies." Several had "earned the designation of 'white slaves' by their toil." As at Gheel, mechanical restraint was frequently employed.[37]

One of the strongest attacks on boarding-out came from C. L. Robertson, superintendent of Sussex County Asylum and co-editor of the *Journal of Mental Science*. In an article in 1865 Robertson had taken a mildly favorable stance on the possibilities of the Scottish system.[38] Two years later, no doubt influenced by the experiences related in "Gheel in the North," he altered his opinion. He now accused the Scottish lunacy commissioners, and particularly Arthur Mitchell, of spreading a "*couleur de rose* tint" over their descriptions of the system. Robertson stated that the amount of official inspection the patients received could not "be worth much," and that there was "little in the Scotch practice but the sixpence a day [the average grant of maintenance] between them and neglect and want." He referred to the guardians the Scottish commissioners selected for the patients as "ignorant and needy persons," and concluded by dismissing boarding-out as "a retrograde step which I think we shall all condemn."[39]

Mitchell responded to Robertson's criticisms with a long and able defense of boarding-out which appeared in the *Journal of Mental Science* the following year. Mitchell accused Robertson of misstatement and misrepresentation. In regard to the regularity of inspection, for example, Robertson had stated only the minimum requirement. Often it took place much more frequently. As to the maintenance grants, the sum Robertson mentioned was the average amount. In reality the grant varied a great deal according to the circumstances of each case. Some guardians asked for only enough aid to clothe the patient, others needed money for food, while in some cases the grant covered the whole cost of the patient's care and maintenance. "There is, and ought to be, a considerable range in the amount of parochial allowances," Mitchell claimed. "It matters nothing how cheaply a patient is kept, if he be well-kept—the cheaper, indeed, the better." In reference to Robertson's charge that the Scottish Lunacy Board had farmed out pauper lunatics to "ignorant and needy persons" Mitchell replied: "I cannot call them *learned* and *affluent*, but I am able to state that they belong to the respectable working class, and I regard that as sufficient. I am also able to state that they are . . . certainly not more ignorant and needy than the class which yields the male and female attendants in asylums." Finally Mitchell drew attention to the fact that Robertson's charges were based on a second-hand knowledge of the workings of the Scottish system. In fact the only evidence ever brought against it was that contained in the anonymous "Gheel in the North." Robertson had been in Scotland the previous year; Mitchell asked why he had not then sought" an opportunity of seeing and judging for himself?" and gallantly offered "him an invitation to come and see."[40]

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[36] Henry Stevens, "The insane colony at Gheel," *J. Ment. Sci.*, 1858, *4:* 433-435; see also Browne "Cottage asylums," 221-227.

[37] "Gheel in the north," *J. Ment. Sci.*, 1865, *11.* 282-285.

[38] Robertson, "Pauper lunatics," 490.

[39] C. L. Robertson, "The state of lunacy in 1866," *J. Ment. Sci.*, 1868, *13:* 466-467; *Idem*, "Care and treatment of the insane poor," *J. Ment. Sci.*, 1867, *13:* 302-303.

The debate over the merits and defects of the "Scotch system" continued in the pages of the *Journal of Mental Science* after 1868. But nearly all the participants were Scots.[41] By then most English alienists had apparently concluded that boarding-out could have no more than a limited application in their country. Robertson conceded that about 15% of the insane poor might be cared for in private homes if "suitable provision [were] made for their care and maintenance."[42] But at that time about 6600 English pauper lunatics, or almost 15% of the entire number, were living with their own or other families.[43]

Obviously, boarding-out was not unique to Scotland. English poor-law authorities had been boarding-out pauper lunatics since the eighteenth century and perhaps longer. The English practice differed from the Scottish in that it was not a "system" directed or countenanced by the central lunacy authority. It was carried out willy-nilly on a purely local basis. Pauper lunatics had been exempted from the general prohibition of out-door relief under the new poor law, and many parishes continued to give families small grants to maintain patients at home.[44] Occasionally parishes would farm-out pauper lunatics to a guardian for a small remuneration. No one but the parish officers knew much about the condition of these "out-door" patients. The commissioners' only source of information was the reports of the poor law medical officers who were required to visit these patients quarterly. The little that the commissioners learned through these means they did not find reassuring. Out-door pauper lunatics were sometimes found in a deplorable state of neglect.[45]

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[40] Mitchell, "Insane poor," 480-481, 486-494.

[41] See J B. Tuke, "The cottage asylum system of management of lunatics as practised in Scotland," *J. Ment. Sci.*, 1870, *15* 524-535; Alexander Robertson, "On boarding the insane in licensed private houses," *J. Ment Sci.*, 1870, *16*· 411-414; Lindsay, "Family system," 497-527.

[42] Robertson, "Care and treatment of the insane poor," 303-304

[43] Twenty-first report of the Commissioners in Lunacy, 1867, p. 70.

The commissioners sometimes urged that these patients should be placed under closer supervision and granted higher maintenance allowances.[46] But like most of the asylum doctors they showed little enthusiasm for proposals to multiply the numbers of privately housed patients. In the late 1850s the commissioners seemed to have been toying with the idea. Their chairman, Lord Shaftesbury, told a parliamentary committee in 1859 that the number of out-door pauper lunatics might profitably be increased if they were properly supervised.[47] By the late 1860s, however, the commissioners had concluded that the problems of supervision were insurmountable, and that boarding-out was not the proper way to relieve the overcrowding of the asylums: "We have strong reasons for doubting whether the system could advantageously be extended so as to afford any material relief to the County Asylums or that it works so satisfactorily in this country as to render its more general adoption at all desirable."[48] The fact that the "system" was in England no system at all, and that a positive program of community care had never been attempted, seems to have escaped the commissioners.

One English asylum superintendent did employ boarding-out to try to relieve the overcrowding of his own institution. This was S. W. D. Williams, Robertson's successor at Sussex County Asylum. Williams' experience convinced him that many poor families desired to have custody of their insane relatives; in fact, he frequently received applications to that effect. In 1870 he adopted a policy of encouraging these applications and of recommending that the asylum committee grant the requests. In each case he ascertained beforehand the suitability of the patient's home and the character of his family. During the first fifteen months of the program Williams discharged 21 patients, most of them long-term residents of the asylum. After two years only one of them had returned and none of them to Williams' knowledge "had in any way misconducted themselves."[49]

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[44] Sidney and Beatrice Webb, *English Poor Law Policy* (London: Longmans, Green 1910), pp. 49, 123.

[45] Fourteenth report of the Commissioners in Lunacy, *PP*, 1860, XVIII, pp. 79-88; Twenty-first report, 1867, p. 70.

[46] Fourteenth report of the Commissioners in Lunacy, 1860, pp. 79-88, See also, Arlidge, *State of Lunacy*, pp. 83, 87, 89.

[47] Select committee on lunatics, 1859, sess. 1, p. 163.

[48] Twenty-first report of the Commissioners in Lunacy, 1867, p. 70

The practice of discharging "uncured" pauper lunatics to their families was in itself nothing new. Other asylums did it regularly. What made Williams' experiment different was his belief that community care could be expanded so as to avoid the necessity of further asylum construction. Few other asylum superintendents shared his confidence.[50] One conceded that Williams' policy might work well enough in the healthy rural environment of Sussex, but could not be adapted to the crowded, dissolute atmosphere of the metropolis:

> London is so large, so all absorbing, so full of vice, drunkenness, and depravity, so different in all its life from country existence, that it is impossible to argue from one to the other; and whilst thinking that Dr. Williams may be able to keep the Hayward's Heath Asylum to its present limits, I fear that the cry in London will for sometime be "Build! Build!"[51]

Since the commissioners and most alienists rejected community care as a solution to the overcrowding of the public asylums, they were left in effect with two alternatives. One was to discharge some of the chronic patients to the workhouses. The other was to extend the asylum system itself. The first possibility most of them found as objectionable as the Gheel or boarding-out systems. Reformers had long opposed keeping lunatics in workhouses because it was unjust to the other inmates, and more importantly, because it was often harmful to the insane themselves. The new poor law of 1834 had organized the workhouses around the principle that they should act as a deterrent against pauperism. The aim was to make workhouse conditions so unappealing to the able-bodied that they would take any job that was available rather than apply for relief. The act's framers had intended that the sick and disabled, including the insane, would be separated and treated differently from the able-bodied. In practice this was not always carried out, and in many workhouses all the inmates felt the effects of the deterrent principle.[52] For this reason few lunacy reformers believed the workhouses could provide the kind of care and treatment the insane required.

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[49] S. W. D. Williams, "How to relieve our crowded lunatic asylums," *Lancet*, 1871, 215, *Idem*, "Our overcrowded lunatic asylums," *J. Ment. Sci*, 1872, *17:* 517.

[50] Williams, "Our overcrowded lunatic asylums," 517; P. N. Laurie, "Discharge of uncured pauper lunatics," *Lancet*, 1871, 901-902.

[51] T. C. Shaw, "The increase of lunacy," *Lancet*, 1871, 930-931.

The commissioners often referred to the deficiencies of the workhouses in their annual reports. Most workhouses lacked or had inadequate facilities for occupation, exercise, and amusement. Few employed anywhere near enough skilled attendants; frequently the supervision of lunatic patients was left to other inmates, who were seldom able to manage "troublesome" cases without using mechanical restraint. While most alienists insisted that the insane required a nutritious and generous diet, many workhouses gave them the same amount and quality of food as the healthy and able-bodied. The lunatic wards, in those workhouses that had them, were usually gloomy, overcrowded, and badly ventilated. Classification of the patients according to their condition was impossible.[53] In 1859 Shaftesbury denounced workhouse lunatic wards as "the most objectionable places [the insane poor] can well have. There is a pretence of giving the lunatic some protection and care, when in fact there is none afforded."[54]

Other observers echoed the commissioners' charges. During the 1850s and 1860s a number of persons interested in reforming the poor law medical services investigated the conditions of many workhouse lunatic wards. The Quaker philanthropist Joseph Rowntree found the wards at Blackburn and other northern cities to be defective in nearly every regard: sanitation, clothing, diet, classification, and facilities for exercise and socializing.[55] In the 1850s Charles Dickens described the "mad ward" of a large London workhouse he had visited as "a kind of purgatory or place of transition." He discovered patients suffering from various disorders commingled to their mutual aggravation.[56] The London workhouse of St.

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[52] Bucknill, "Chronic lunatics," 196; Stallard, "Pauper lunatics," 466-467, Webb, *Poor Law Policy*, pp. 49, 61, 63, 123-126; Report from His Majesty's Commissioners for inquiry into the administration of the poor laws, *PP*, 1834, XXVII, p 131.

[53] Supplement to the twelfth report of the Commissioners in Lunacy, *PP*, 1859, sess. 1, pp. IX, 1, 9-11, Eleventh report, 1857, pp. 15-16; Stallard, "Pauper lunatics," 466-477, Bucknill, "Ninth report," 14; *Idem*, "The custody of the insane poor," *J. Ment. Sci.*, 1858, *4* 467-470.

[54] Select committee on lunatics, 1859, sess 1, p. 160.

[55] *Preston Guardian*, 26 April, 3 May, 1862, letters to ed. from Joseph Rowntree. Clippings found in Public Records Office (PRO/MH/25-15).

[56] Charles Dickens, "A walk in a workhouse," *The Uncommercial Traveler and reprinted pieces* (London and New York. Oxford University Press, 1958), p. 539. See also his "Wapping workhouse" in the same volume.

Pancras, according to a report of 1856, maintained some of its lunatics in underground rooms. In one of these the only window opened into a privy. Others were so "offensive from putrid urine passed by bed-ridden patients," that the windows had to be kept constantly open.[57] In 1865 Dr. Francis Anstie investigated the lunatic wards of the London workhouses as part of a *Lancet* Sanitary Commission on the State of Workhouse Infirmaries. He found that the repeated complaints of the lunacy commissioners had brought about improvement in many wards. But none of them, he claimed, could compare with the first-rate public asylum, and in general they were entirely unsuited to the care of the insane.[58]

Most lunacy reformers agreed with Anstie, but a few believed that with modifications the workhouses might be made suitable for chronic patients. Dr. Robert Boyd, one of the most consistent supporters of this idea, contended that under a proper system incurable and harmless patients might be as well off in a workhouse as in an asylum. He proposed that parts of the workhouses could be made "auxiliaries to asylums," thus aiding the poor "without additional cost to the public."[59] C. L. Robertson argued that there were many chronic patients who preferred workhouse life to the asylum, and that about 25% of the insane poor might "with great relief to the wards of the county asylum . . . be kept under proper restraints in the workhouse." Unfortunately 25% was the proportion of pauper lunatics maintained in the workhouses at the time Robertson wrote (1867), so it is hard to see how he expected any benefit from this plan.[60]

From time to time the commissioners considered using the workhouses for the care of chronic patients. The problem was making the workhouses suitable. In 1857 they sanctioned the transferral of a small number of chronic patients from public asylums to workhouses, in order to make room for curable or dangerous cases. From this limited trial the commissioners concluded that the possible benefits of such exchanges were "not sufficient to set against the certain evil of subjecting lunatic Patients, even of a harmless, quiet kind, to a quality of diet and accommodation which has the immediate tendency to exaggerate their disorder."[61] Attempts to carry out such a policy continued in the 1860s, but with little effect and little support from the commissioners.[62]

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[57] H. B. Jones, *Report on the Accommodation in St. Pancras Workhouse* (London, 1856), *passim*

[58] F. Anstie, "Insane patients in London workhouses," *J. Ment. Sci* , 1865, *11:* 330-333. For reports of the *Lancet* Commission on Workhouse Infirmaries, see *Lancet*, 1865-67.

[59] Robert Boyd, "Letter to the president of the Association of Medical Officers of Asylums and Hospitals for the Insane," *J Ment. Sci.*, 1855, *2.* 123-124; *Idem*, "Care and treatment of the insane poor," *J. Ment Sci* , 1870, *16:* 316-317.

[60] Robertson, "Care and treatment of the insane poor," 229.

In the end the commissioners and the majority of the alienists agreed that creating more asylum accommodation was the only answer to the problem of overcrowding. The potential drawbacks of community or workhouse care, they felt, were too great. The only proper method of caring for most pauper lunatics was, and would continue to be, in asylums. The public asylum had achieved "unparalleled" successes in the treatment of the insane. It would be unwise to abandon them "when already so much has been secured, and when, comparatively speaking, so little remains to be done."[63]

These conservative reformers suggested several ways to relieve the overcrowding of the public asylums. One scheme popular with many asylum superintendents was the erection of small cottage asylums near the parent institution. The idea resembled Gheel in some respects and probably owed something to its influence. But many alienists believed that cottage asylums would be superior to Gheel in that the patients would be under the authority and supervision of the asylum officers. Such buildings could be used not only to accommodate quiet chronic cases, but also to provide a kind of halfway-house for convalescent patients prior to their discharge. J. C. Bucknill began to experiment with the cottage idea in the 1850s at Devon County Asylum, using two small houses originally built for the asylum officers. He reported that the trial proved "most satisfactory." In 1859 Dr. John Arlidge, former superintendent of St. Luke's, referred approvingly to the arrangement at Devon and recommended it as an alternative to the Gheel System. A discussion at the 1862 meeting of the Association of Medical Officers of Asylums and Hospitals for the Insane revealed considerable support for the idea.[64]

The lunacy commissioners encouraged these efforts because the cottage asylum idea approximated to suggestions they had been making for years.[65] They frequently proposed that asylum authorities should erect separate, less expensive structures for chronic patients, arguing that many of the costly therapeutic features of the regular public asylums were superfluous in incurable cases. A clause authorizing the building of separate asylums for chronics had been included in the Lunatic Asylums Act of 1845.[66] But this scheme never materialized, probably because of opposition to it from asylum superintendents. John Conolly, superintendent of Hanwell Asylum during the 1840s, criticized the proposal on the grounds that many incurable patients were more sensitive to their environment than the curable. He feared that asylum committees would use the separate accommodation provision as an excuse to save money by depriving chronic patients of the high quality care they required.[67]

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[61] Twentieth report of the Commissioners in Lunacy, *PP*, 1866, XXIII, p 20, Twenty-first report, 1867, p. 69; Fifteenth report, *PP*, 1861, XXVII, pp 21-22.

[62] See Twenty-first report of the Commissioners in Lunacy, 1867, pp. 69-79; Boyd, "Care and treatment of the insane poor," 319; Webb, *Poor Law Policy*, p. 340.

[63] Robertson, "Pauper lunatics," 483-484, *Idem*, "Care and treatment of the insane poor," 292-293, 299; Stevens, "Gheel," 426, 428-429, "Gheel in the North" 283.

[64] Bucknill, "Chronic lunatics," 197-198; Arlidge, *State of Lunacy*, pp. 145-147; Discussion "On the cottage asylum system," 333-336; Robertson, "Pauper lunatics," 483-484.

Nevertheless, the commissioners continued to advocate separate, cheaper accommodation for chronic cases. By 1867 a few public asylums had erected "detached blocks" and several others had created "associated accommodation" of one kind or another.[68] But in relation to the total number of chronic patients these attempts were very limited in scope. The only large-scale adaptation of the separate accommodation concept was the building of the Metropolitan District Asylums. The object of these institutions was not to relieve the public asylums but to remove pauper lunatics from the metropolitan workhouses. The main impetus for their creation, moreover, came not from lunacy reformers but from persons working to improve the poor law medical services. This group included many workhouse medical officers, philanthropists such as Joseph Rowntree, Louisa Twining and the members of the Ladies Workhouse Visiting Society, and medical reformers like Florence Nightingale. The *Lancet* Commission on Workhouse Infirmaries of 1865-67 was appointed as part of this movement. The conditions uncovered during that inquiry helped lead to the passage of the Metropolitan Poor Act of 1867, which established the Metropolitan Asylums Board to administer medical services to the London Poor. One of the tasks allotted to this board was the erection of asylums to house the pauper lunatics still lodged in London workhouses. The *Lancet* Commission had recommended that these patients be removed to suburban cottage asylums, intermediate in nature between the public asylum and the workhouse. This proposal was taken up by Gathorne Hardy, President of the Poor Law Board, and incorporated into the 1867 act. By 1870 the Metropolitan Asylums Board had constructed two huge establishments in the country at Caterham and Leavesden. The sites were selected for cheapness and the buildings, erected as inexpensively as possible, hardly fitted the image of cottage asylums. Each was a three-story block intended for 1500 patients, with one mammoth ward to a floor.[69]

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[65] Twenty-first report of the Commissioners in Lunacy, 1867, p 77; *Report of the Metropolitan Commissioners in Lunacy*, 1844, p. 92

[66] 8 & 9 Vict. c.126 s.27

[67] John Conolly, *The Construction and Government of Lunatic Asylums and Hospitals for the Insane* (London: Dawsons, 1968; 1st ed 1847), pp. 4-5. Many U.S. superintendents opposed such schemes for the same reasons. See Grob, *Mental Institutions*, pp. 304-319.

[68] Eleventh report of the Commissioners in Lunacy, 1857, p. 23, Supplement to the twelfth report, 1859, pp 36-37; Twenty-first report, 1867, pp. 71-73. "Associated accommodation" seems to have meant asylum outbuildings which had been made into residences for patients.

Within a year of opening Caterham and Leavesden were filled and the metropolitan workhouses were virtually emptied of their pauper lunatics. But these poor law asylums do not seem to have been kept to their original intentions. In practice it proved difficult to restrict them to the chronic and harmless cases who were supposed to inhabit them. The commissioners charged that the district asylums sometimes admitted dangerous or curable patients who "would not have been considered as at all fit for treatment in workhouses." Another problem was that the authorities of nearby county asylums (Hanwell, Colney Hatch, and Surrey) began sending patients to Caterham and Leavesden although the district asylums had been intended for former workhouse patients only. The commissioners considered this practice imprudent; in part, because the persons so disposed were outside their immediate jurisdiction; in part, because they considered it an attempt by the asylum authorities to evade a statutory obligation to provide regular asylum accommodation.[70]

By the beginning of the 1870s the problem of overcrowded public asylums was no nearer solution than a decade before. Most reformers opposed the return of chronic patients to the workhouses.[71] The experience of the Metropolitan District Asylums indicated that attempts to segregate "incurables" in less expensive structures would prove more difficult than anticipated. Indeed, these receptacles were eventually restricted to the care of the retarded and senile.[72] The cottage asylum idea had produced some encouraging results, but its application had been very limited. Hundreds of cottages would have been required to meet the demand, and the savings which could have been realized from such a plan would not be great.

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[69] Gwendoline M. Ayers, *England's First State Hospitals and the Metropolitan Asylums Board* (Berkeley: University of California Press, 1971), pp. 1-42; Ruth G Hodgkinson, "Provision for pauper lunatics, 1834-1871," *Med. Hist.*, 1966, *10* 151-152; Alexander Walk, "Mental Hospitals," in *The Evolution of Hospitals in Britain*, ed. F N. L Poynter (London· Pitman Medical Publishing, 1964), pp. 130-140; Anstie, "Insane patients," 335-336; 30 & 31 Vict. c.66.

[70] Twenty-fifth report of the Commissioners in Lunacy, 1871, *PP*, XXVI, p 66; Twenty-sixth report, 1872, *PP*, XXVII, p 52.

[71] In 1870 the workhouses held over 12,000 pauper lunatics, about 25% of their total number Twenty-fifth report of the Commissioners in Lunacy, 1871, pp. 1, 11

The only plan which promised to lighten the public asylums' burden, produce a considerable savings to the ratepayers, and perhaps increase the happiness of the chronic patients, was the radical one of community care. The commissioners and most alienists had rejected this idea virtually without a trial, basing their opposition on the "perhaps." Their experiences with the results of home care had in general not been happy ones. They had seen patients brought to the asylums suffering from the worst effects of mistreatment and neglect.[73] One may accuse them, as radicals like Wynter did, of being too conservative. But their reason for caution cannot be denied.[74]

Even if they had overcome their objections to community care there were other obstacles to its implementation. Public reaction would undoubtedly have been adverse, especially in the more populous districts where very few of the insane were not in either asylums or workhouse wards.[75] Even transporting a patient to an asylum could cause problems if in the process "sane" people were forced into contact with the "madman." People often complained about the practice of transporting lunatics in railway carriages.[76] Taking patients into the community for recreational purposes produced equally hostile reactions. The minister of a church near Peckham House Asylum wrote to the commissioners on at least two occasions to protest the fact that patients were allowed to take walks in the neighborhood during church hours.[77] One alienist claimed that whenever he or one of his colleagues took a few "well-managed" patients anywhere outside the asylum—for a trip to the seaside for example—the public responded violently: "straightway the whole town rises in arms, and threats and imprecations are bestowed upon the 'mad-doctor' who dares to bring his lunatics betwixt the wind and the visitors' nobility. Folks think of them as pariahs and outcasts." He concluded that the recent reforms in the treatment of the insane had done little to alter peoples' attitudes towards them.[78]

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[72] Walk, "Mental Hospitals," pp 130-140.

[73] For examples of such cases, see the *Times*, 20 May 1844; 1 Aug. 1851

[74] Wynter, "Non-restraint," 438-441.

[75] There was a great diversity, regionally, in the proportions of pauper lunatics in asylums, workhouses, and homes. In urban Middlesex, almost 70% were in asylums, 26% in workhouses, and less than 5% in private houses. In the rural Welsh county of Anglesey the respective proportions were 26%, 1.10% and 72%. Twenty-fifth report of the Commissioners in Lunacy, 1871, p 18, Table XIII

[76] Minutes of the Commissioners in Lunacy, 30 Sept. 1847, 2 Feb. 1848, PRO/MH/50-2; *Times*, 14 Sept 1847, 27 July 1850

[77] Minutes of the Commissioners in Lunacy, 16 Dec 1957, 4 May 1858, PRO/MH/50-9.

But lunacy reforms had brought about a change. The opening of scores of lunatic asylums during the nineteenth century had encouraged the belief that the only proper abode for the insane was an asylum. The intent of the reformers who had established these institutions was largely philanthropic. But placing the insane in these "vast asylums" had the ironic effect of creating "unphilanthropic delusions in the mind of the general public." People had come to regard "lunacy as something so horrible and dangerous that its victims must be pushed like the leper of old, beyond the gates of the city."[79]

Another impediment to radical innovation was that by the 1860s the public asylum system had achieved the status of an establishment. The intentions of Ashley's Acts had been more or less carried out. Nearly every county and borough had provided an asylum for its pauper lunatics. The amount of capital sunk in these institutions undoubtedly created a conservatism among the county and borough authorities. Andrew Wynter pointed out that as more and more money was invested in asylum extension the asylum committees became more resistant to any new radical proposal. He also charged the asylum superintendents with having become a kind of "vested interest" opposed to community care out of fear it would "endanger their present position."[80] Such a development is impossible to substantiate but not difficult to conceive. The *British Medical Journal,* more charitable and perhaps more sophisticated, suggested that the alienists' stance was the inevitable outcome of the existing system:

> [The asylum doctors] were shut off from the world in much the same manner as their charges; they had to fulfill many duties but slightly pertinent to the physician, and it was only human nature that they should magnify their office by elaborations of the theory that created it. They impressed on the mind of the public a belief

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[78] "Acquitted on the ground of insanity (from a 'mad-doctor's' point of view)," *The Cornhill Magazine,* 1865, *12:* 440.

[79] *Brit Med. J*, 1871, 200; Maudsley, *Physiology and Pathology,* pp. 494-495.

[80] Wynter, "Non-restraint," 449

which the public had impressed upon them—that they, and only they, could understand the treatment of insanity.[81]

It seems that in the final analysis most of the obstacles to community care derived from the reforms of the previous decades. As Maudsley pointed out in 1868, "a great and practical reform has been effected, the completeness and excellence of which have become a positive difficulty in the way of further reform."[82] Though nearly everyone concerned with the insane acknowledged the existence of the public asylums' ailments, there was a marked reluctance to experiment with alternatives. The commissioners and most asylum superintendents could accept only one prescription for the asylums' sickness: "Build! Build!"

Nevertheless, advocates of dispersal of the insane did not despair. Wynter predicted that radical innovation would come sooner or later:

> . . . that a sweeping change [in the direction of community care] is one of the inevitable reforms we feel blowing towards us in the breath of every angry discussion among practical psychologists on this matter, is but too obvious. As we see wing after wing [of the asylums] spreading . . . we are reminded of the overgrown monastic system, which entangled so many interests and seemed so powerful that it could defy all change, but for that very reason it toppled of its own weight. Asylum life may not come to so sudden an end, but the longer its present unnatural and oppressive system is maintained, the greater will be the revolution when it at last arrives.[83]

For decades after 1870 such an outcome must have appeared unlikely. The asylum system continued expanding to meet an ever growing demand for accommodation. But within the last two decades this trend has reversed itself, and the number of patients in asylums has steadily declined. The change has largely resulted from the development of a community centered mental health program. Community clinics, hostels or halfway-houses, psychiatric wards in general hospitals, and new forms of chemotherapy have decreased rates of institutionalization and permitted many former mental patients to return to the community. The success of these innovations has produced a reversal of attitudes towards the treatment of the insane. In the nineteenth century most lunacy reformers demanded their segregation from society on humane, medical, and social grounds. For much the same kinds of reason, many of today's mental health reformers call for integration of the mentally ill into the community. Yet despite contemporary disenchantment with the institutional solution, the old mental hospitals still have their defenders. Whether the new forms of community care will bring the asylum system to an end as Wynter predicted, remains to be seen.[84]

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[81] *Brit. Med. J.*, 1871, 200.

[82] Maudsley, *Physiology and Pathology*, pp. 499-500.

[83] Wynter "Non-restraint," 449; See also Maudsley, *Physiology and Pathology*, pp. 499-500

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[84] See e.g., *Lancet*, 1958, *2*. 210-214, 1961, *1*. 656-657, 1971, *2* 1360, 1368; *Brit Med J.*, 1967, *1*: 781-782, 1971, *4*. 700; Hugh Freeman, "Focusing on individual needs," *Mind and Ment Hlth.*, Spring 1973, 7-9, J. A. Baldwin, *The Mental Hospital in the Psychiatric Service: A Case Register Study* (London and New York: Oxford University Press for the Nuffield Provincial Hospitals Trust, 1971), pp. 24-37.

FRANCESCO REDI AND THE FLY EXPERIMENTS

PAULA GOTTDENKER

The Tuscan physician Francesco Redi (1626-1698) is often credited with having struck the first blow against the doctrine of spontaneous generation, that is the idea that organisms could be generated from non-specific antecedents. Some commentators, however, hold that the time-honored belief in this form of generation did not yield under his attack; rather, it was gradually abandoned as the finer structures and functions of living things were uncovered with the aid of the microscope, and the use of more sophisticated investigative techniques. The validity of these propositions will be considered in this paper with respect both to the nature and immediate impact of Redi's work, as well as its long-range influence upon the scientific community.

In considering the topic of generation, Redi had several options. As a poet and humanist with a solid foundation in the classical literature he conceivably could have been content to contribute to the endless and fruitless speculations of the time about any form of generation. Or as an avid naturalist and charter member of the short-lived Accademia del Cimento (1657-1667), he might have joined the growing number of experimenters who tried to prove the actuality of spontaneous generation. He chose, instead, to disprove the contention that living beings, and in particular insects, owed their origin to some kind of metaphysical event within a matrix of decaying materials. And it is very likely that his interest in this problem was whetted by the "experimenta" performed by the German Jesuit Father Athanasius Kircher (1601-1680).

In true Baconian spirit, Kircher had insisted that only knowledge derived from experimentation can lead to the truth.[1] The experimentation he had in mind, however, was an artfully contrived imitation of nature, which at the same time served to confirm his own ideas on spontaneous generation.[2] As he describes it, he had squandered years searching for the cause of the *vis seminalis* or *spermatica* which mediated the lawful interchange of generation and corruption. When he finally managed to locate it

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[1] Athanasius Kircher, *Mundus subterraneus*, 12 books (Amsterdam J Janson, 1668), Book 10, Sect. 1, Cap. 3, p. 168.

[2] *Ibid* , Prefatio II, pp. 1-2

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in the seeds deriving from dead plants and animals, or as he termed it, in *"panspermia,"* his experiments were off to a brilliant start.

Using a substrate of shredded or macerated "seed" cadavers, enriched with animal or insect excrements, he exposed this mixture to gentle heat and moisturizing humidity. After a certain amount of time, he was usually rewarded for his pains with a lively brood of whatever animals he had intended to "generate," such as frogs, serpents, scorpions, bees, butterflies, and ever so often, "innumerable species of flies." One may wonder why anyone should want to increase the numbers of the already ubiquitous flies, but it cannot be denied that Kircher made it easy for any interested party to do so by giving explicit instructions for the "genesis of flies":

> Collect a number of fly cadavers and crush them slightly. Put them on a brass plate and sprinkle the macerate with honey-water. Then expose the plate, as chemists do, to the low heat of ashes or of sand over coals, or even of horse dung; and you will see, under the magnifying power of the microscope, otherwise invisible worms, which then become winged, perceptible little flies, and increase in size to animated full-fledged specimens. The same may be accomplished with their own excrements. . .[3]

This and similar experiments were painstakingly detailed in the twelfth book of Kircher's *Mundus Subterraneus* (1664-65) and came to serve as a sort of laboratory manual not only for Redi, but even for the eminent entomologist Réaumur to the latter's considerable embarrassment.

Redi's *Esperienze intorno alla generazione degl'insetti* (1668) was published after the closing of the Accademia del Cimento, yet it clearly reflected the defunct association's maxim—*Provando e Riprovando*. Time and again Redi repeated the Kircherian experiments, always following the instructions to the letter, in an endeavor to obtain the expected results. But as hard as he tried, all his efforts to bring about artificial generation seemed to end in the production of flies. For instance, however often he laid the decayed pieces of a dead snake in sunwarmed earth and kept them moist with rainwater, he was unable "to see the generation of these blessed little hand-made snakes." At last he came to the conclusion that "serpents . . . are born only of coitus; all other serpentine generations whether of decay or whatever manner, . . . are far from credible."[4] And the same must certainly be true for higher organisms. But why, he wondered, did his experiments always generate flies? Could it be that these insects really originated in putrefying materials, as so many authors, both ancient and contemporary, claimed? Redi was not one to jump to such "precipitate and fallacious conclusions";[5] and thus he came to devise his own simple but elegant tests.

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[3] *Ibid.*, Cap 4, Experimentum I, pp. 361-362

[4] Francesco Redi, *Esperienze intorno alla generazione degl'insetti* (Firenze, 1674 [1668]), p. 59.

He began his now famous experiments by letting freshly-killed Aesculapius snakes *(Coluber longissimus)* decay in an open box. Before long, the snakes were covered with many little worms which devoured the meat down to the bare bones, and then disappeared through a chink in the box. Undaunted, Redi started all over again, but making sure this time that the worms would not escape; now he was able to observe their pupation, and in turn the emergence of adult flies from the pupae. Just in case these events were only characteristic of snake meat, he repeated the same type of experiment with all sorts of other meat from mammals, birds and frogs, both raw and cooked. He always obtained the same result. Next he put several fish into a box he had perforated with tiny holes, and closed it with a lid which was also perforated. Soon he noticed clusters of tiny eggs stuck around the perforations, and the following day, different kinds of larvae which had obviously slipped from the now empty egg shells, were busily engaged in stripping the meat from the fish skeletons. It seemed reasonable to assume, then, that adult flies had dropped their eggs on the decaying meat, and "that all these worms are born from parental seed; that flesh, plants, and all other putrefied matter . . . have no other function in the generation of insects than to provide a . . . suitable nest into which the animals can deposit their grubs, eggs, or other offspring during the breeding season."[6]

But this was after all only *his* word, against the well-entrenched traditional belief concerning the generation of insects; Redi still needed to find incontrovertible proof to convince everyone that he was right. After spending several weeks on these preliminary experiments, he finally hit upon a method which promised to do just that. Into each of four wide-mouthed flasks he put, respectively, one snake, some riverfish, four little eels, and a joint of milk-fed calf. He immediately covered the jars with strong paper tied around with string, and carefully sealed them. An identical set of four flasks, left uncovered, was promptly invaded by little worms, while adult flies entered and left the jars as they pleased. The covered jars, on the other hand, remained free of worms even after the meat had turned putrid in both sets; but flies were dropping "deposits" on the paper because they could not get inside. This test certainly bore out Redi's contention that worms do not appear on dead animals "unless other live animals deposited their seeds in them" and this he had effectively prevented by the tight seal on the vessels. But at the same time, the seal also kept fresh air from entering the test jars; it now remained to be shown that stale air was not the determining factor in the non-appearance of the larvae.

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[5] *Ibid*., p. 3.

[6] *Ibid*., p. 11.

Thus he anticipated the one objection which was to plague Spallanzani one hundred years later, and which was finally overcome by Pasteur in the early 1860s. Redi handled this contingency by covering a large container, into which he had placed some meat and fish, with very fine veiling [*sottilissimo velo di Napoli*]. For extra protection, he set the jar into a kind of meat-safe which was also covered with the gauzy material. This allowed the air to circulate freely while many flies, attracted by the smell, hovered over the jar and dropped grubs on top of the veiling; but none of the hungry brood could get at the meat inside the container.

After several experiments, he was ready to infer that the same results could be obtained with all animal and plant substrates, given the same conditions. As long as fruits and vegetables, whether cooked or raw, were kept in a tightly closed place, they could not be infested with insect larvae.[7] Indeed, Redi thought that this might even explain the origin of plant galls. The gall-fly had to deposit its egg first, and only later, in response to the insect sting, would a gall nut be discharged around it. Thus the gall could be viewed as a disease of the tree, just like the tumors which grow in animals from similar inroads of other smaller animals. But instead of pursuing this profitable line of thought any further by putting it to the test, Redi yielded to speculation. The egg arose in the center of an already established gall nut, and as the gall matured, developed into a gall-fly. Then, after the fly had gnawed its way to the periphery of the nut, it would "abandon its native prison and take boldly to the air in search of food."[8] But this sudden about-face from his conviction that all living beings came from parental seed needed an explanation, and Redi resorted to speculation along Aristotelian lines: "To be quite frank, I would say that I have come to believe that there are two ways in which fruits, vegetables, trees and leafy plants grow wormy." The usual manner, he explained, was the introduction from the outside of grubs looking for food. The other way was internal, for if there was a "soul or virtue which generates the flowers and fruits in living plants, it can also generate the grubs which grow in them. And who knows, it may even be that many of the fruits are produced for no other reason . . . than to serve as a matrix for the generation of these worms . . ."[9]

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[7] *Ibid*, pp. 58, 78.

[8] *Ibid*, p. 96.

While other entomologists stepped in to correct his error, Redi himself seems to have regretted his rash and retrogressive statement on plants. In a letter of 1693, discovered by Charles Bonnet (1720-1793), he explained that the reference to "plant souls" had escaped from his pen "as if by force," and that he hoped, on the basis of new observations, to clear up this matter to everyone's satisfaction.[10] On the other hand, his admittedly untested suspicions that round worms and lice arose in the intestines and other parts of human beings were shared by most of his contemporaries.[11] In fact, the question of the origin of intestinal worms was to continue to perplex both biologists and theologians (e.g. how could noxious parasites have pre-existed in the still blameless Adam in the Garden of Eden?), until the pertinent life cycles were fully elucidated some 170 years later.[12] The *Esperienze* was well received in spite of Redi's apparent lapse in judgment, if five editions in the two decades following its first publication are a reliable measure of the popularity of the book. There is no doubt that it was widely and attentively read, and that his experiments were often repeated, and sometimes modified to answer related questions, by members of the newly founded scientific associations in France and England, and by individual investigators all over Europe.

It was not surprising, however, that Athanasius Kircher and his disciples would protest vigorously against Redi's "unsuccessful" repetition of his *experimenta*. In the *Arca Noë* (1675) Kircher dealt with such moot problems as whether insects needed to take passage on the Ark since their continuity was entrusted to spontaneous generation (a few were carried along as food for the birds). But he also availed himself of the opportunity to inject a rather plaintive rejoinder to the author of the *Esperienze:* "He [Redi] says that his experiments were done to satisfy an urge of contradicting me. Yet I, . . . undertook my investigations in genuine candor, not hidden in a cabinet, but openly, in the presence of the most learned professors at the Collegium Romanum. In this way . . . they were eyewitnesses to my procedures, especially those concerning the generation of serpents, scorpions, frogs [etc.]. . . . Yet these were the very experiments which then were deemed utterly false; just because one or the other of them was unsuccessful when he [Redi] tried it, he concludes that Kircher must be wrong." There were many other naturalists who had published testimonials to the effect that they followed Kircher's precise instructions with signal success. All one needed to produce the desired effect was "great care, unending patience, and perseverance," and to hold unwaveringly before the eye of the mind "the model of Nature."[13]

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[9] *Ibid* , p. 95.

[10] Charles Bonnet, *Oeuvres d'histoire naturelle et de philosophie*, 18 vols. (Neuchatel, 1783), vol 15, Palingénésie, pp. 422-423: "Il est vrai que j'ai laissé échapper ce trait de ma plume presque par force, mais si j'ai du tems, j'espère m'exprimer plus clairement dans des nouvelles observations auxquelles je travaille."

[11] Redi, *Esperienze*, p. 123.

[12] For a detailed historical treatment of the origin of worms see John Farley, "The spontaneous generation controversy (1700-1860). The origin of parasitic worms," *J. Hist. Biol* , 1972, *5* 95-125.

As late as 1691, the Italian Jesuit Father Filippo Buonanni, Curator of Kircher's vast collection of curiosa, and sometime naturalist, declared himself ready to defend the idea of spontaneous generation against the steadily increasing number of contrary views. He was certain that the many microscopical observations of minute things and the many additional experiments in the enlarged edition of his *Observationes circa viventia, quae in rebus non viventibus reperiuntur* (1681) would provide more insights into, and a clearer understanding of, the time-honored doctrine.[14] Even so, he thought, anyone who could claim that spontaneous generation did not occur regularly in putrefying materials, had to be prompted by his own carelessness, manual as well as ocular. Far from proving the impossibility of spontaneous generation, the negative results were due solely to the negligence and the faulty reasoning of the experimenter.[15] Buonanni, like Kircher before him, used the microscope extensively, and he was well aware of the important new discoveries reported in the current literature, but his ingrained prejudices prevented him from renouncing his belief in spontaneous generation.

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[13] Athanasius Kircher, *Arca Noe* (Amsterdam, 1675), Sect 3, Cap. 4 as quoted in Filippo Buonanni, *Observationes circa viventia, quae in non viventibus reperiuntur* (Rome, 1691), pp 87-88: " . contradictionis pruritum sedandum, inquiens. Ego sane uti germano candore in experimentis sumendis processi, ita quoque nihil in secreto recessu, sed in doctissimorum Collegij Romani Professorum presentia (ne de mea fide et sinceritate dubij, sed fidi et oculati testes mearum operationum praesertim circa Serpentum, Scorpionum, Ranarum . . generationem testes esse possent) executus sum, et proinde dictum falsissimum sit, tale et tale experimentum ab alio factum successum non habuit, ergo a Kirchero factum falsum est."

[14] Buonanni, *Observationes*, pp. ix-xii.

[15] *Ibid* , pp. 86-87 "Ut quid ergo generationem spontaneam impossibilem dicam, eo quod non semper in putrefactis rebus eas viderim, cum ex sola negligentia vel manus vel oculi potuerit non evenire."

Buonanni even made a point of quoting Marcello Malpighi's statement that "the tumors produced in various plants . . . are both incubator and nourishment [but not the source of origin] for Flies and diverse Insect genera. . . ";[16] and he repeated how "this highly praised investigator" had observed that oak galls grew around insect eggs deposited in the leaf, due to a fermentative interreaction between plant juices and ovipositor exudate.[17] But to Buonanni this meant that when the "vivificatory spirit of the fly's seminal liquor was sprinkled on the erupting little galls, it produced the worms in their interior," for he simply could not accept the idea that little worms were generated from "the seed of gravid flies." Moreover, since each little gall always had its own specific larvae, which eventually gave rise to definite species of worms, flies, or gnats, this was undeniable proof that nature does not operate by accident.[18]

Paradoxically, the same premise underlay the *rejection* of spontaneous generation by the outstanding Dutch entomologist and microanatomist, Jan Swammerdam (1637-1680). Having explored in great detail "the constitution and arrangement of parts" in insects, he found it extremely annoying that some people would judge these little creatures to be imperfect compared with larger animals; that they should be believed to be merely haphazardly engendered products of putrefaction: ". . . which amounts to changing the immutable and constant order of nature into some fortuitous event."[19] But what else could one expect if only very few writers knew any more than the names of these little animals, and usually relied on nothing but imagination in describing their structure and generation. One of the rare exceptions to this was Francesco Redi who had "solidly proved that insects do not arise from corruption" and that, generally, no animal is generated from decay.[20] Even the insects which attached themselves to certain plants or fruits as if by instinct, according to Swammerdam, "were generated from the seed of their own kind which had been placed there beforehand."[21] And while it may seem at first glance as if chance had a hand in the generation of intestinal "insects" (he intended to throw light on this problem later), it was clear that there was no room for chance in the Creator's works, whose greatness we realize only dimly. Striving indefatigably to uncover the rules behind the observed effects, our minds can be enlightened only by experiments, for "without them we cannot be sure of the truths we pretend to know."[22]

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[16] Marcello Malpighi (1628-1699), *Anatome Plantarum*, 2 vols. (London: J Martyn, 1675-79), vol 2, *De Gallis*, p. 46.

[17] *Ibid.*, p 49.

[18] Buonanni, *Observationes*, pp. 107, 108.

[19] Jan Swammerdam, *Histoire générale des insectes*, translated by Guillaume de Walcheren (Utrecht: Jean Ribbius, 1685 [1669 in Dutch]), p. 3.

[20] *Ibid*, pp. 94, 50.

[21] *Ibid.*, p. 159.

Being also inspired to investigate the "secrets of nature," the renowned Italian physician-naturalist Antonio Vallisneri (1661-1730) addressed his efforts to the problems of generation. The very title of his treatise *Esperienze, ed osservazioni intorno all'origine, sviluppi, e costumi di varii insetti,* shows his familiarity with Redi's work, but he went even further by redoing the latter's experiments, correcting minor mistakes, and also the major error concerning the origin of galls. These *Miglioramenti e Correzione,* he stressed, were not meant to diminish the importance of the original discovery, but rather to strengthen and support the new doctrines which Redi had so courageously upheld against the opposition of the Old School.[23] The defenders of the ancient philosophy insisted, for instance, that the stagnant air in the closed vials was not fit to engender insect or any other life from putrefied meat; in fact this concept was used by them as a "sacred anchor" whenever they found themselves buffeted by contradictions.

Vallisneri, of course, was in full agreement with the "modernists" who insisted that while meat or similar putrescibles always rotted after being kept in enclosed vessels for some time, no life whatsoever was generated from them, unless they were previously infested with insect eggs.[24] But he still needed to confront the inveterate opposition with such evidence as only experiments could supply. For this purpose, he set up a series of tests in which flies were allowed to deposit eggs on a substrate of calf's meat in twelve lightly covered vials. As soon as he noticed a batch of eggs in one of the vessels, he would cover it, and the successive vials, more securely; but he used different materials for each, such as damp parchment, heavier or thinner weaves of taffeta, twofold to fourfold, or just heavy paper. The more air-tight the cover the sooner both eggs and any adult flies caught inside the vials would die; Vallisneri gained from this one of his "universal laws"—air is essential in sustaining life. But when he made sure, as Redi had done, that neither flies nor ova got into the vials, he could state with confidence: ". . . I always succeeded in seeing all the material in all the test vessels putrefied . . . but I never had the chance to see a single spontaneous birth."[25]

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[22] *Ibid* , p 163, 165.

[23] Antonio Vallisneri, *Opere fisico-mediche, stampate e manoscritte, Raccolte da Antonio suo Figliulo,* 3 vols. (Venice: Sebastiano Coleti, 1733), vol. 3, pp. 617-622.

[24] *Ibid.*, vol. 1, Dialogo Secundo, p. 45: ". . . *ricorrere all'aria, come ad Ancora sacra contra gli urti d'ognuno.*" (Italics in original).

Under the circumstances, this was not an unusual observation—everything in the vessels decayed, but no life ever appeared in them spontaneously. Although Aristotle had clearly stated that he saw putrefaction as a side-effect rather than the source of generation, it had become commonplace to regard it as a prerequisite to the spontaneous origin of life. After all, putrefaction has always been, and still is, part of daily experience. But Vallisneri made a potentially important discovery when he observed that the lack of circulating air often kept the putrescible material in the air-tight vessels from becoming a "sodden, smelly, and utterly disgusting mass"; the meat would remain as firm, and perhaps even redder, than when it was first obtained. The question now was how did the presence of outside air effect the unpleasant changes in the condition of the meat? To explain this, Vallisneri speculated that the freely circulating, fast-moving air repeatedly knocked and battered the meat until it was a soggy decaying pulp.[26]

In general, Vallisneri had a remarkable gift for anticipating issues which would eventually cause a stir in the scientific world. His reaction to an incident related to him by "a very learned and wise Prelate" is a case in point. It seems that when this dignitary and several other high ranking personages assisted at the disinterment and opening of the lead casket containing the remains of Pope Pius V, they were startled by a mouse jumping out of the otherwise impenetrable container. What other explanation was there but that the mouse had arisen from the saintly body's putrefaction? After respectfully submitting five alternative explanations, none of which was based on spontaneous generation, Vallisneri sharpened his criticism of "dignified persons who had allowed themselves to be victimized by a senseless Epicurean atheism." Since the endproduct of putrefaction was an essentially haphazard mixture of elements, *they* certainly should be aware that not a filthy *"Madre Putredine"* but only the omnipotence of God created all of life. Anyone who thought otherwise, was in danger of becoming entrapped in "chaotic confusion and abominable error.[27] The allusion to the abominable error of atheism was, in fact, a harbinger of the changing climate in which acceptance of the doctrine of spontaneous generation, after having enjoyed its imprimatur all along, would now become suspect to the Church.

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[25] *Ibid.*, vol. 1, pp. 45, 46 ". . . *e mi riusci sempre vedere le cose in tutti quanti i vasi imputridite . . . ma non potei giammai avere la fortuna, di vedere alcuna nascita spontanea.*"

[26] *Ibid.*, pp. 45-46.

It becomes apparent with just a cursory glance at the contents of the early *Philosophical Transactions* of the Royal Society of London, that many of its members and foreign correspondents shared an interest in generation and related topics. After Redi's book was reviewed there in 1670, a number of articles commenting on it, as well as other books on the subject of origins and generation, appeared. They clearly indicated that the general consensus of opinion opposed the idea of spontaneous generation, both from scientific as well as religious points of view. Redi's error about the origin of gall nuts could not be overlooked, of course, but he was given ample recognition for his part in the discrediting of the old doctrine. The anonymous reviewer of the *Esperienze* in the *Philosophical Transactions* summarized neatly and neutrally that the "Learned and Ingenious Author of this Book . . . [undertook] therein to evince, that there is no such thing as *Aequivocal* Generation, but that every Animal is generated by the seed of another Animal (its parent), or, at least, from some living and uncorrupted Plant, as out of Oak-Apples, and several . . . Excrescencies of vegetables."[28]

In the next volume of the *Transactions* (1671) a more critical comment appeared by the well-known naturalist John Ray (1627-1705): "It seems to me at present most probable that there is no such thing [as spontaneous generation]; but that even all Insects are the natural issue of parents of the same species with themselves. *F. Redi* hath gone a good way in proving this, having cleared the point concerning generation *ex matrix putrida*." However, exception had to be taken to Redi's ascribing fruit and vegetable excrescencies to the vegetative soul of the host plants, and to his treatment of insects bred in animal bodies. It was Ray's hope that he would shortly be able to throw more light on these matters.[29] The same volume carried remarks by Ray's friend and fellow-naturalist Martin Lister, which also discussed the review of the *Esperienze*. What "strange Oeconomy," wrote Lister, could bring about "such monstrous relation as half animal half vegetable." It was unfortunately true that so far he had always been too late to see "the egg itself" which, in his opinion, "was affixed to or near the place by the parent-insect, where the Gall rose"; but in time, and with diligence, he hoped to be able to discover it. Moreover, since the Insect-animals produced of such excrescencies were both male and female, their parents must have originated in a similar manner, for Nature would not make them of different sexes in vain.[30]

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[27] *Ibid.*, Nuova Obbezione . p. 83.

[28] *Philosophical Transactions*, 1670, *5*, n. 57. 1175-76.

[29] John Ray on spontaneous generation of animals [*Esperienze* by Redi], *Phil. Trans.*, 1671, *6*, n. 74: 2219-20.

Whoever reviewed Padre Filippo Buonanni's book on *Ricreatione dell' ochio e della Mente Nell'osservation delle Chiocciole* (1681), fully agreed that the study of shellfish was a proper diversion for philosophers; but he drew the line at the author's refusal, in the face of contrary experimental evidence by men such as Redi and Lister, to abandon the ancient "opinion of their [shellfish] being *equivocally* produced out of *putrefaction,* for which he brings little proof besides the well known reasons, and Authority of Aristotle."[31] During 1693-94 the reviews of three books by John Ray appeared in the *Philosophical Transactions,* and the topic of generation was discussed in every one of them. Whether he propounded the *Wisdom of God* manifested in the Works of Creation; or engaged in *Physico-Theological Discourse* concerning the Creation, the Deluge, and the end of the World; or classified Quadrupeds and Serpents, his position on spontaneous generation never changed. As in his letter of 1671, he still denied the possibility of equivocal origin for even the meanest insects and plants. If there were such a thing, it would amount to nothing less than Creation! As for the first appearance of individuals of every species, he had to ascribe it to the original handiwork of God; moreover, judging by the actual situation, the primordial animalcules must have been ova.[32]

George Garden of Aberdeen, another contributor to the *Philosophical Transactions,* discoursed at length about his own understanding of the *Modern Theory of Generation.* He considered it more than probable that (1) "all animals are ex *Animalculo,*" (2) that these animalcules were in the male semen, and (3) required the female ovum only for housing and proper nutriment while they developed into the individuals of their respective species. However, the fundamental germs had been formed by the Creator *ab origine mundi.* With reference to his first point, he wrote,

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[30] Martin Lister on the *Esperienze* by Redi, *Phil. Trans* , 1671, *6,* n. 75: 2254-56.

[31] Review of the book *Ricreatione dell'ochio e della Mente Nell'osservation delle Chiocciole* by P. Filippo Buonanni, *Phil. Trans.*, 1684, *14,* n. 156· 507.

[32] Review of *The Wisdom of God* by John Ray, *Phil. Trans.*, 1693, *17,* n. 196· 611-614; review of *Three Physico-Theological Discourses,* by John Ray, *Ibid* , pp. 615-617; review of *Synopsis Methodica Animalium Quadrupedum et Serpentim Generis* by J. Ray, *Phil. Trans.*, 1693, *17,* n. 202. 853.

". . . we ought not to conclude that any Insects are Bred of Corruption, and not *Ex Ovo;* because we cannot discern the particular manner of their Propagation," for our vision is limited. As for points two and three, Garden admitted that the convincing observations of Leeuwenhoek had won him over to the animalculist position.[33]

The remarkable discoveries of Antony van Leeuwenhoek (1632-1723) which made his name a household word all over Europe, have been detailed many times and need not be enumerated here. But they also created a new set of problems: Where did the microscopic animals come from? Although Leeuwenhoek was not usually given to speculative flights of fancy, he figured that the microscopic animals were not born in the air—it was too dry there for their survival. On the other hand, if they were ". . . begotten in the clouds, where, in the continual dampness, they could remain alive, . . . [they could] be conveyed still living to us in mist and rain."[34] As far as he was concerned, spontaneous generation was out of the question, but he still wanted to find out what other people were thinking about the generation of the little animals: ". . . and as I heard, especially, that a certain Gentlemen hath writ that no living creature can be generated if the vessel, or bottle, in which any moisture or meat has been put, be tightly stoppered; I had a mind to carry out some trials of this matter."[35]

Leeuwenhoek filled two equal-sized glass tubes, which were closed at the bottom, with a quantity of ground pepper and rain water, and drew out the flame-softened open ends to form a narrow tip. After the heated air inside the vessels had cooled down to room temperature, he again used a flame to seal one of the tubes closed while leaving the other one open to serve as a control. Three days later, a sample drop from the open vessel was teeming with various "very little animalcules" while nothing seemed to be happening in the sealed tube. When he broke off its tip after five days, the air "escaped with force out of the tube: for which reason I rather fancied that there would be no living creatures in this water. But I found the contrary . . ."[36]

Under the microscope this water also contained living animalcules but of a distinctly different sort than the others.[37] This was a most unexpected outcome of the experiment: If, as Redi had suggested, no life could arise in covered vessels, how did these creatures get into the sealed tube? Could it be ". . . that when the Gentleman afore-said spake of living creatures, he meant only worms or maggots, which you commonly see in rotten meat, and which ordinarily proceed from the eggs of flies," and are so big that they can be observed with the naked eye? In other words, was it possible that spontaneous generation was a selective process which occurred only in microscopic and never in macroscopic organisms? At this point, however, Leeuwenhoek turned away from the puzzling experimental results to the more direct pursuit of the wonders of microscopic nature. Each additional observation of animalcules increased his assurance "concerning the generation of all things." And ". . . seeing these wondrous dispensations of NATURE, . . . we ask ourselves, Can there even now be people who still hang on to the ancient belief that living creatures are generated out of corruption?"[38]

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[33] George Garden, "A discourse concerning the modern theory of generation," *Phil. Trans.*, 1691, *16*, n 192: 474-483

[34] Quoted in Clifford Dobell, ed., *Antony van Leeuwenhoek and his "Little Animals"* (New York. Dover Publications, 1960 [1932]), pp 162-163.

[35] *Ibid.*, pp. 196-198.

[36] *Ibid.*, pp. 196-198.

The French mathematician-microscopist Louis Joblot (1645-1723) whose *Descriptions et Usages des Plusieurs Nouveaux Microscopes . . .* was published in 1718, also could not side with those who believed that the little animals were a product of putrefaction: ". . . this opinion is the more inconceivable since it would amount to abandoning to the irregularities of chance the Works which are the outcome of an order one cannot ever admire sufficiently." Aside from religious reasons, his own innumerable experiments had pointed to a much more plausible explanation for the origin of these little creatures than spontaneous generation.[39] For his experimental infusions, Joblot used mostly such fragrant plant materials as pepper, tree barks, tea, roses, and jasmine. All yielded little animals of wondrous shapes and character; but the most telling results derived from a series of experiments with new hay. While the first examination of the cold water infusion disclosed a promising variety of microscopic animalcules, the extremely unpleasant odor of the rotting hay necessitated an abrupt end of the experiment. It was a few months before he tried again.

This time he filled two vessels with equal amounts of cold hay-water, but covered only one of them with dampened parchment. Even so, the animalcules in the closed container, after only two days' incubation, outnumbered the ones in the open vessel. Leeuwenhoek had given up under similar circumstances, but not Joblot. Theorizing that population pressure had reduced the number of inhabitants of the open container; and that the progeny of eggs laid on the hay before it was infused, populated the closed vessel,[40] he proceeded to the crucial third experiment with hay infusions, which is a classic of its kind:

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[37] *Ibid.*, Dobell points out that Martinus Beijerink who repeated the experiments in 1913 identified these new organisms as anaerobic bacteria, and Leeuwenhoek as their first observer, p. 198.

[38] *Ibid.*, p. 270.

[39] Louis Joblot, *Descriptions et usages de plusieurs nouveaux microscopes, autant simples que composez* (Paris. Jacques Collombat, 1718), Avertissement, unpaginated.

> On the 13th of October I boiled similar new hay in tap water for more than a quarter hour; I put equal quantities of it into two vessels of about the same size; I stoppered one of them on the spot, even before it had cooled down: I left the other one open, and after a few days, I observed animals in it, but not a one in the infusion which had been corked; and after keeping it closed for a considerable time in order to find any living insect, if it was supposed to appear in it; but having found none, I finally left it uncorked, and in a few days I noticed some [animals] in it: which makes it clear that these animals were born from eggs floating in air; because the ones which may have been on the hay had been totally destroyed in the boiling water.[41]

These findings went well, Joblot thought, with what a number of famous authors had already proved by carefully executed experiments and sound argumentation—that all animals whatsoever came from eggs. Since he himself, moreover, had provided ample evidence that "neither alteration, nor corruption, nor the bad smell, are the cause of the generation of animals . . . in plant infusions," he could now advance his alternative hypothesis with confidence.

There were innumerable tiny animals floating in the air close to the earth. Attracted by the aromatic corpuscles emanating from a certain plant, they would rest on it, take nourishment from it, and deposit their young and eggs at the same time, or while still in flight. Now if several species of animals were to choose the same plant as a depository for their offspring, it would follow that an infusion of those plants would produce all the various kinds of little animals which can be actually observed in them.[42] A form of *panspermia* thus was also the answer for Joblot, and 150 years later, Pasteur would still look to it as an explanation for the occurrence of microorganisms in unsterilized solutions.

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[40] *Ibid.*, Part II, pp. 38, 39

[41] *Ibid.*, p. 40. "Le 13 octobre je fis boüillir de semblable foin nouveau dans de l'eau commune, durant plus d'un quart-d'heure; j'en mis ensuite une égale quantité dans deux vaisseaux, à peu près de même grandeur, j'en bouchay un sur le champ, & même avant que le tout fut refroidi: je laissay l'autre découvert, & j'y apperçus des animaux au bout de quelques jours, & pas un dans l'infusion qui avoit été bouchée; & après l'avoir gardée ainsi fermée un tems considérable pour y trouver quelque insecte vivant, s'il y en eût dû venir; mais n'y ayant rien trouvé, je la laissay enfin débouchée, & au bout de quelques jours j'y en remarquay: ce que fait comprendre que ces animaux avoient pris naissance des oeufs répandus dans l'air; puisque ceux qui s'étoient pû rencontrer sur ce foin avoient été ruinez totalement dans l'eau boüillante."

The belief in the generative powers of putrefaction seemed to be definitely on the way out; its negation was never more charmingly put than in the instructive, lively, and very popular *Spectacle de la Nature* (1732) by the Abbé Pluche. Even a child could understand that " . . . if you always see Insects in a Body as soon as it begins to corrupt it is not because these animals are engendered by Putrefaction, . . . but it is only because they have Mothers who know that . . . corrupted Bodies afford the properest Nourishment for their Young. . . ." In fact, continued the Abbé, Redi's experiments had shown that, attracted by its odor, the mother fly preferred rotten meat to the finest "*China* vase" for lodging her eggs. One might even say that the odor was expressly created for that very purpose![43]

The *Spectacle* was often reprinted and translated into other languages and thus it came to the appreciative attention of the English poet-micrographer Henry Baker (1698-1774). His own book, *The Microscope Made Easy* (1742), however, was obviously patterned after Joblot's work, even though it fell short of the Frenchman's ingenuity in experimentation. For reasons known only to himself, Baker chose to skip the innovative use of heat sterilization and reverted instead to the simplicity of Redi's original device in covering his infusions with muslin or thin lawn fabric. Understandably, then, his emphatic conclusions concerning spontaneous generation were based on reasoning rather than experimentation: "Nothing seems . . . more contrary to Reason, than that *Chance* and *Nastiness* should give a Being to Uniformity, Regularity, and Beauty: That . . . dead *corrupting* Matter, and blind *uncertain Chance* should create living Animals, fabricate a Brain, . . . Nerves issuing from it, compose a Contrast of Muscles, furnish out Eyes, Lungs, a Heart, . . . and all other Parts useful to such Creatures." Truly, "had not microscopes discovered the manner how all these Things are generated, and restor'd to God the Glory of his own amazing Works," this opinion "would, probably, still have been taught and believed."[44]

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[42] *Ibid.*, Part II, pp. 44-46.

[43] Antoine Noël, Abbé Pluche, *Spectacle de la Nature*, translated by Samuel Humphreys as *Nature Display'd* (London, 1733), pp. 24-26.

[44] Henry Baker, *The Microscope Made Easy* (London: R. Dodsley, 1742), p. 149.

If Redi's *Esperienze* may be said to have initiated the era of the insect, then the *Mémoires pour servir à l'histoire des insectes* (1734-42) by René Antoine Ferchault de Réaumur (1683-1757), clearly marked its culmination. In this work he left no room for doubt that "There is no insect which is born from the corruption of matter, be it vegetable, animal, or something else . . ." And again: "No insect engenders others of a different species than his own."[45] But his firm denial took its strength from the twin sources of his deep religiosity, and his belief in the fixity of species: The Author of all things had arranged it so that the earth should be inhabited by a prodigious but finite number of animal species. Any other provision, making for unlimited speciation, would be severely taxing the resources for the sustenance of already existing species. Thus spontaneous generation, the ceaseless purveyor of new species, had no reason to be.

Réaumur actually deplored the necessity of having to reiterate these well-known facts, but he had been challenged [in the *Journal de Trévoux* (1735)] on the grounds of the superiority of the Kircherian system by an anonymous reviewer of the first volume of his *Mémoires*. Before then, Réaumur had assumed that the belief in spontaneous generation which had so long impeded the study of the generation of insects, had at last been abandoned by modern naturalists who would not accept any but true ideas. He had imagined that there would no longer be any naturalists who needed to be convinced that rotten meat or wood did not turn into complex organized machines with finely integrated parts as numerous as the corresponding ones in man![46] How could anyone in his right mind accept and, worse, repeat Kircher's experiments? Yet even the great Réaumur—he could hardly bring himself to make this shameful confession—had sown earthworm powder with all the precautions indicated by Kircher, as well as planted in soil some dried pieces of the worm, without ever seeing a single earthworm arise from this material.[47] But his contrition over his brief moment of foolishness soon gave way to the, as it turned out, equally transitory conviction that he would never again have to countenance ideas à la Kircher, and that spontaneous generation had at last disappeared from the scene.

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[45] René Antoine Ferchault de Réaumur, *Mémoires pour servir à l'histoire des insectes*, in 3 vols. (Paris: Imprimerie Royale, 1734-42), vol 2, Preface, p. xl.

[46] *Ibid.*, p. xvi.

[47] *Ibid.*, p. xxxiii. "J'avoue que j'ai une espèce de honte de dire que j'ai semé de la poudre de vers de terre, avec les précautions marquées par Kircher, & que j'ai planté en terre . . . des morceaux de vers très-secs, sans qu'il en soit jamais né un seul ver de terre."

Judging by the writings of a number of contemporary authors, it appears that Redi's work was known to most of them; that some of them repeated, or modified, or patterned their own experiments after his; and that all of them were in some measure influenced by what he had to say. For instance, his metaphor of the substrate serving as a nest for insect broods rather than being their source of origin, appears frequently in the literature of the time.

It is true, of course, that the experiments *per se* were not the sole factor in the "overthrow" of the belief in spontaneous generation. But neither was the microscope exclusively responsible for such an eventuality, for it could be, and was, used by those on both sides of the argument. Kircher and Buonanni relied on their microscopical studies as much as Swammerdam, but the superimposition of preconceived ideas frequently distorted the actual image in their mind's eye. The Dutch entomologist, on the other hand, was so impressed by the beauty of the structures he uncovered with his superb microtechniques, that he saw it as the glorious proof of the Work of God; the haphazard generation from decay had no place in such a conception.

In general, religious feelings against the spontaneous origin of living organisms became more prominent toward the end of the seventeenth century, which marked a distinct departure from the conciliatory position established by the Fathers of the Church; St. Augustine, in particular, had preached that since even the unusual was possible with God, this included spontaneous generation. Another aspect of the unquestioning belief in the Story of Creation, was the insistence that all present life forms had remained the same since their first appearance in Paradise. It was exactly this consideration which strengthened Réaumur's argument against the willy-nilly introduction of additional new species by spontaneous generation, because it might upset the foreordained balance of earthly existence.

In this way, all of the above elements influenced the abatement of the long-held belief in spontaneous generation, to a point where it seemed to be a thing of the past. As it happened, Redi's experiments, although of considerable significance to his own contemporaries, did not signal "the beginning of the end" of spontaneous generation; nor, for that matter, did Pasteur succeed in dealing it the "mortal blow from which it would never recover."[48] The reason for this, however, is not simply that "the very nature of the problem prevents a solution by experimental means."[49] Scientists, by definition, still insist on repeatable experiments carried out according to the scientific method, that is with parallel controls and testing of variables in the experimental design. Completely overlooked by men such as Kircher and Buonanni, this practice was used to good advantage by Redi, and was subsequently refined by both friends and foes of the spontaneous generation doctrine. It is this method, the translation of theory into practice, which was of more than passing importance at a time when speculation was the usual approach to seemingly insoluble problems. To be sure, all experimental efforts directed towards that end merely tested whether this form of generation could or could not occur under certain predetermined conditions. They consistently neglected to address themselves to the fundamental problem of the origin of life; the verdict on that is still out of reach.

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[48] Pasteur Vallery-Radot, ed., *Oeuvres de Pasteur,* 7 vols. (Paris: Masson et Cie., 1922-1939), vol. 2., pp. 328-348. Des générations spontanées, Conférence fait aux "Soirées scientifiques de la Sorbonne," le 7 avril 1864 p. 342: "Jamais la doctrine de la génération spontanée ne se relevera du coup mortel que cette simple expérience lui porte."

Finally, it is more than likely that Redi's *Esperienze* served as a catalyst, and by suggesting different ways of thinking about the problem, new and even revolutionary insights became possible. It signifies less whether Redi or Pasteur were successful in what they set out to achieve, than that each man in his own way opened new vistas for science.

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[49] Farley, "Spontaneous generation," p. 97. Professor Farley's recent book on *The Spontaneous Generation Controversy from Descartes to Oparin* (Baltimore. Johns Hopkins University Press, 1977) delineates various other factors besides the well-known experimental attempts used to discredit this form of generation, which may have influenced the scientific community's changes of attitude towards it.

OPHTHALMOLOGIC RESEARCH IN PRE-WORLD WAR I RUSSIA

ANATOLY BEZKOROVAINY

The practitioners of ophthalmology were the first medical specialists of Russia to achieve a world-wide reputation. Important papers in this field were written by Russian ophthalmologists as early as the 1840s, a time when the other medical specialties were in their infancy in Russia. This was not, however, the result of some progressive attitude in this regard on the part of the Russian government or Russia's educational institutions, but was instead caused by the initiative and high professional competence of the ophthalmologists themselves. It is thus of considerable interest to investigate the identities of these early Russian ophthalmologists and to describe their contributions to this medical specialty.

There has been considerable disagreement as to the prevalence of eye disorders in pre-World War I Russia. According to Talko, there were some 200,000 "blind" persons in Russia in 1893 (population 112 million).[1] Many of these were cared for by a semi-private network of asylums ("curatoriums"), and only at the beginning of the twentieth century were clinics established under the initiative of Bellarminov in various parts of Russia to take measures against the spread of eye diseases. The most pessimistic report on the prevalence of eye diseases in Russia was made by Skrebitsky,[2] who made a survey of the medical records of army recruits between the years 1879 and 1883, and found that for every 108 recruits examined, one was excused because of "blindness." This report was disputed by V. Dobrovolsky.[3] He pointed out that first of all, Skrebitsky failed to include in his sample the large number of recruits that were assigned to the reserves rather than the acting army, and, secondly, he did not mention the criteria used by the Russian army to define "blindness." For instance, if the recruit's vision in the right eye was worse than

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[1] J. Talko, "Anzahl der Augenartzte in Russland," *Klin. Monatsbl. f Augenheilk.*, 1893, *31*. 401-403.

[2] A. J. Skrebitzky, "Ueber Verbreitung und Intensitat der Erblindungen in Russland und die Vertheilung der Blinden uber die verschiedenen Gegenden des Reiches," *Klin Monatsbl f. Augenheilk.*, 1886, *24* 107-109.

[3] W. Dobrowolsky, "Zur Frage über die Verbreitung der Erblindungen in Russland," *Klin. Monatsbl f Augenheilk.*, 1886, *24:* 324-330. The transliteration of Russian names, used by the German journals in which the Russian ophthalmologists published, has been retained in the footnote citations for this article.

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20/40, he was excused as "blind," no matter how good the vision was in his left eye. Dobrovolsky also related a method that had originated among some Caucasian inhabitants, whereby a significant number of recruits were excused from military service: the right eye would be injured with a long needle so that cataract would develop. This was a sufficient disability to keep the potential recruit out of the army. Dobrovolsky also presented some statistics on blindness in St. Petersburg, stating that the incidence of blindness was 8.8 per 10,000 population in the city. This figure, he stated, was somewhat higher than the incidence recorded in other parts of the country, since there were several large asylums for the blind in the city. Among the 27,291 recruits from St. Petersburg that he had studied, thirty-four were excused from military service because of "blindness." This included those who were totally blind as well as those whose vision was less than normal in the right eye. This came to one "blind" recruit for every 802, a number considerably lower than that described by Skrebitsky.

The prevalence of eye disorders in Russia's armed forces was thoroughly documented by Talko.[4] Such a sample is admittedly not representative of the population as a whole. Of the 871,000 enlisted men and 36,000 officers in the army in 1890, some 30,400 were treated for eye disorders resulting in 30,000 full recoveries. The highest incidence of eye diseases was in the Kiev military district, the lowest was among the Don Cossack cavalry. The most common diseases were catarrhal conjunctivitis (48.8%), and trachomal conjunctivitis and trachoma (36.5%).

Regardless of whether or not eye disorders were a serious problem in Russia, the number of ophthalmologists practicing there was rather small for a country of that size. There were 200 eye specialists in Russia in 1893 with an additional 300 that could be considered as semi-specialists.[5] Most of these physicians were attached to universities and the larger hospitals, such as the St. Petersburg Eye Clinic. Russian ophthalmologists were organized into the Russian Ophthalmological Society, established in 1885 in St. Petersburg by a group of 16 oculists.[6] Many were also members of the German Ophthalmological Society: of its 336 members in 1886, eighteen were Russians, and of the 264 members in 1892, some 20 were from Russia.

It is appropriate to write a few lines on the most prolific Russian contributor to the Western ophthalmologic literature who was a most faithful chronicler of events in Russia that were of interest to the world ophthalmological community. Joseph Talko (1838-1906) was a graduate of Kiev University (1861), and a military physician for most of his professional life. After being stationed in the various areas of the Russian Empire, he was appointed as chief oculist for the Warsaw military district. While there, he founded the Lublin Medical Society. Talko's articles on the clinical practice of ophthalmology were restricted to case reports, and were thus of a rather limited interest for the medical profession at large. His main contribution was, as previously stated, his faithful documentation, in the German literature, of events in Russia pertaining to ophthalmology, and it thus represents valuable source material for the medical historian. For instance, Talko wrote about the eye-glasses that had been worn by the Russian patriarchs (heads of the Russian Orthodox Church) between the years of 1589 and 1700.[7] All the glasses were round and convex and were poorly polished. They were constructed to be placed on the nose in the manner of the pince-nez type of spectacle. Talko could not establish whether or not they were produced in Russia.

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[4] J. Talko, "Ueber Augenerkrankungen in der Russischen Armee," *Klin. Monatsbl f Augenheilk* , 1893, *31*. 144-150.

[5] J. Talko, "Anzahl der Augenartzte," 401-403.

[6] "Editorial," *Klin. Monatsbl. f. Augenheilk.*, 1886, *24:* 155-156.

In one of his more amusing communications, Talko reported on a Saratov police case where a murderer was identified by an optogram from the retina of the victim's eye.[8] The validity of such an identification was disputed by several scientists including Talko himself, and by a well-known photographer, Richard Thiele. The latter wrote that the police had probably used a spot on the cornea rather than the retina of the victim to reconstruct the image of the murderer. It was not stated whether or not the evidence was admitted in the court, or what eventually happened to the accused. In the same communication, Talko reported on the use of fish skin in cases where skin grafts did not succeed.[9] This method was pioneered by Katsaurov, an ophthalmologist with the Yaroslav General Hospital, who used the skin of the eel pout (*Lota Vulgaris*) to repair damaged eyelids. Apparently the attached fish skin acted as a support for the growth of epidermis that eventually covered the entire fish skin transplant. This method was also used by the surgery department of the Hospital to cover the stumps of amputated limbs. Talko also provided an interesting observation on the ophthalmologic aspects of Tsar Alexander II's fatal injuries in 1881 following the explosion of an anarchist's bomb.[10] Though the official cause of death was given as massive hemorrhage from the Tsar's shattered limbs, Talko doubted this diagnosis because of the report by a Dr. Dvoryashin, who had attended the Tsar following his injuries. Dvoryashin had apparently noted a clonic cramp in the left eye of the Tsar, which did not disappear even after the heroic measures instituted to save the Tsar had raised his blood pressure, improved his heartbeat, and permitted the monarch to regain temporary consciousness. Talko felt that the cause of the Tsar's death might have been cerebral hemorrhage, since the clonic cramp observed usually indicated damage to the fourth and sixth cranial nerves.

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[7] J. Talko, "Zur Geschichte der Brillen in Russland," *Klin Monatsbl. f. Augenheilk.*, 1893, *31*. 217-220.

[8] J. Talko, "Offene Correspondenz Jaroslav a.d Wolga; Zur Optographie ophthalmoskopischer Gasbilder; Transplantation von Fischhaut," *Klin. Monatsbl f Augenheilk.*, 1892, *30*. 356-361

[9] *Ibid.*

The man who was primarily responsible for elevating ophthalmology in Russia to the dignity of a separate medical specialty was Eduard Junge (1832-1898). He was born in Riga, obtained his medical education at Moscow University, and studied abroad under Virchow, Helmholz, Müller, and Graefe. The first chairs of ophthalmology in Russian medical schools were established in 1859, one at the Military Medical Academy in St. Petersburg, and the other at Moscow University. Junge was appointed to occupy the chair at the Academy. He remained there from 1859 to 1882, when he resigned to accept the directorship of the Agricultural Academy near Moscow. Through Junge's efforts, an oculist was appointed to the medical staff of every military district in Russia to look after the visual problems of the soldiers.[11]

In addition to being an able administrator and promoter of the field of ophthalmology in Russia, Junge contributed some important original work. He was able to demonstrate a clinical case corresponding to an experimental finding in animals, where the cutting of the trigeminal nerve resulted in the inflammation of the cornea: a child aged one and a half was admitted to the clinic suffering from general weakness, conjunctivitis, and keratitis, of the cornea. The child died, and upon autopsy, it was found that the nerve fibers of the trigeminal nerve were degenerated (fatty degeneration). The appropriate ganglia showed a heavy infiltration by connective tissue and fat droplets.[12] Junge also was responsible for some fundamental work on the pathology of *Retinitis pigmentosa*, and managed along the way to accuse H. Müller of absconding with his ideas on the subject.[13] He discovered a striated retina in a woman seventy-six years old who had died of a stroke. The pigment cells that had invaded the retina had positioned themselves along the blood vessels thus forming a characteristic pigmented network. The same pigment cells were also found in the choroid, and pathological changes were seen in the nerve fibers. The retina had lost its function wherever the pigment cells were located, and such atrophied areas had also become extraordinarily thick. In another individual with a similar disorder, the pigment cells were distributed throughout the retina at random without any relation to the blood vessels. In this case, the optic nerve disc was unrecognizable, and the ganglion layer of the retina had completely degenerated. Junge felt that the retinitis was caused by an inflammation of the choroid, and that the immediate causes of blindness in these cases were optic nerve atrophy and the deterioration of the blood supply.

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[10] J. Talko, "Erscheinungen in den Augen des verwundeten Kaisers Alexander des Zweiten," *Klin. Monatsbl. f Augenheilk.*, 1881, *19* 168-169.

[11] J. Talko, "Eduard Junge," *Klin. Monatsbl. f. Augenheilk.*, 1898, *36* 413-414.

[12] E Junge, "Ophthalmologisch-mikroskopische Notizen," *Graefe's Archiv*, 1859, *5(1)*. 191-204.

The second chair of ophthalmology to be established in Russia was at Moscow University, and its first occupant was Gustav Braun (1827-1897), a graduate of the same University. He wrote the first Russian language ophthalmologic text, and was the author of several original articles on glaucoma.[14] Simultaneously with Donders and Graefe, Braun suggested that a condition known as excavation of the optic disc (*Amaurosis cum excavatione papillae nervi optici*) was a form of glaucoma. Today, it is known to occur as a complication of the disease. The most striking property of this disease, according to Braun, was the absence of acute episodes before partial blindness set in. He treated most of his patients with iridectomy, but where the surgery was not consented to, he observed a development of opaqueness of the vitreous humor, the lens, the cornea, and the iris. The cornea became very hard and insensitive, and at this point, complete blindness set in.

There were a number of other Russian academic oculists in the early and the middle nineteenth century, though their contributions were somewhat less notable than those of Junge and Braun. Thus, Vladimir Karavaev was a professor at Kiev University who died in 1892 at the age of 81, with a 52-year professional career behind him.[15] He was especially skillful at removing cataracts, and is said to have performed this operation on Empress Helena Pavlovna, the sister of Tsar Nicholas I.

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[13] E. Junge, "Beiträge zur pathologischen Anatomie in der getiegerten Netzhaut, *Graefe's Archiv*, 1859, *5(2)*. 49-95.

[14] G. Braun, "Bemerkungen zur Lehre vom Glaucom," *Graefe's Archiv*, 1863, *9(2)*: 222-227.

[15] J. Talko, "Professor Dr. Wladimir Karawajew," *Klin. Monatsbl. f. Augenheilk.*, 1892, *30*. 327-328

An oculist who was honored by Junge as the first Slavic ophthalmologist was Victor F. Szokalski (1811-1891), a Pole, who, nevertheless, had a considerable influence upon the development of ophthalmology in all of Russia.[16] Szokalski was a graduate of Warsaw University (1828), and participated in the Polish insurrection of the 1830s as a Polish army physician. When the rebellion against Russian rule did not succeed, Szokalski emigrated to Western Europe, where he practiced his profession for the next 20 years. His chance to return to Poland came when Krakow University invited him to occupy its chair of ophthalmology. However, the Austrian government, which had jurisdiction over Krakow University at that time, was no more anxious to have a Polish nationalist of Szokalski's caliber within its borders than was the Russian government. The appointment was not approved. Eventually, the Russian government gave Szokalski permission to return to Warsaw, and in 1853 he joined the Warsaw Ophthalmologic Institute. He remained there until the re-opening of Warsaw University, when he joined its ophthalmologic faculty. In 1871, Szokalski resigned his position in protest of the edict instituting the Russian language as the language of instruction at the University. In spite of his anti-Russian stance and Polish nationalism, the Russian government saw fit to award Szokalski the order of St. Vladimir (one of the highest civilian awards in Russia) upon the 50th anniversary of his medical practice (1889). Szokalski published his work mostly in local Polish and Russian medical journals.

The professional affiliation of the early Russian ophthalmologists was not always the university, and it is probably safe to say that in the era prior to the development of the universities as the principal centers of medical research and learning in Russia, accomplished ophthalmologists could be found practicing privately or in the various municipal hospitals. One such man was Georg Jaesche (1815-1876), a leader in Russian ophthalmologic surgery, who, contrary to the statements of many medical historians, was not an ophthalmologist at all, but was, instead, a general surgeon. Jaesche was born in Dorpat, and obtained his medical education in his home town.He then occupied various positions in several Russian provincial hospitals, the last one being as the chief physician of the Nizhny-Novgorod General Hospital. Georg Jaesche's brother, Emannuel, became an ophthalmologist and was a frequent contributor to the ophthalmologic literature.[17] We are indebted to Emannuel Jaesche for drawing the attention of the Western world to his brother's contribution to what is today known as the Arlt-Jaesche operation.[18] This procedure corrects entropium and distichia, or inversion of the eyelid and the inversion of the eyelashes, respectively. Georg Jaesche published a description of his operative method in 1844 in a local Russian medical journal, and his article did not receive much attention outside Russia at that time. The operation consisted of 3 steps: the ciliary edge was separated from the eyelid; an oval piece was cut from the front of the eyelid; and the ciliary edge (with the eyelashes) was folded into the front and sewn over the area that was exposed in step 2. The whole procedure took 3-5 minutes to accomplish.

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[16] J. Talko, "Viktor Felix Szokalski," *Klin. Monatsbl f Augenheilk.*, 1891, *29* 78-81.

Another pioneering oculist in Russia, who was primarily associated with various Russian hospitals rather than a medical school was W. F. Froebelius (1812-1886). He was born in St. Petersburg and was a graduate of Dorpat University. In 1842, he joined the St. Petersburg Eye Hospital and was also on the staff of the St. Petersburg Foundlings' Home. He was the first to perform an iridectomy in Russia (1857), and was instrumental in establishing the first Russian vaccination institute at the St. Petersburg Foundlings' Hospital. Froebelius was an accomplished eye surgeon, who advocated the removal of as large a portion of the iris as possible for the purpose of treating glaucoma.[19]

Robert Blessig (1830-1878) was another famous Russian oculist of this era. He was born in St. Petersburg, studied medicine at Dorpat graduating in 1855, and spent some time abroad with Virchow, Arlt, and Graefe. In 1863, he became the chief physician of the St. Petersburg Eye Hospital, where he remained until his death from typhus fever acquired from a patient during surgery.[20] Blessig has been credited with being the first to describe retinal cysts in 1855. These are today called Blessig's cysts or Ivanov's cysts. He was also one of the first to describe embolism of the retinal artery.[21] This disorder was observed in a sixty-two-year old merchant, who suffered sudden blindness in one eye. Blessig saw a yellow spot in the area of the embolus and numerous minute hemorrhages throughout the retina. Later, a discoloration of the retina set in, which Blessig explained on the basis of insufficient circulation. Blessig's recognition of the above disorder was undoubtedly aided by his experience with arterial emboli during his sojourn in Virchow's laboratory, where Blessig had studied the effects of the tying of the renal artery in dogs and rabbits.[22] The pathological changes he observed in the kidney as a result of this maneuver included a marked hyperemia, hemorrhage, inflammation, fatty infiltration, and destruction of uriniferous tubules and Malpighian tubules.

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[17] See for example his method for alleviating the obstruction of the tear ducts· E. Jaesche, "Zur Behandlung der Tränenschlauch-Obstruktionen," *Graefe's Archiv*, 1864, *10(2)*. 166-180.

[18] E. Jaesche, "Jaesche's Operation für Entropium und Distichiasis," *Klin. Monatsbl. f. Augenheilk.*, 1873, *11*. 97-101.

[19] W. Froebelius, "Zur Technik der Iridektomie bei Glaucom," *Graefe's Archiv*, 1860, *7(2)*· 119-123.

[20] Editorial, "Robert Blessig," *Klin. Monatsbl f. Augenheilk* , 1878, *16*. 240-242.

[21] Robert Blessig, "Ein Fall von Embolie der Arteria centralis retinae," *Graefe's Archiv*, 1861, *8(1)*: 216-226.

With the development of universities in Russia, academic researchers became the chief, if not the only, contributors to Russian ophthalmologic research literature. Junge's chair of ophthalmology at the Military Medical Academy was taken over by Vladimir Dobrovolsky (1838-1904) in 1893. Dobrovolsky's interests included the mechanism of accommodation, the etiology of myopia and astigmatism, and the physiology of the retina. He believed that there were two types of myopia: the inborn type, where the eye axis was lengthened as a result of a congenital disorder, and the acquired type, where the lengthened axis was due to the atrophy of the optic nerve. He was a strong proponent of the theory that the sole mediator of accommodation was the ciliary muscle.[23] From his study of astigmatism in a number of patients, Dobrovolsky concluded that the disorder was accompanied in most cases by amblyopia (where the patients sees the object for the first minute or two, and it then becomes blurred), and that the proper diagnosis of astigmatism could not be accomplished without the use of topical atropine.[24] Dobrovolsky was able to bring about artificial astigmatism in himself and a number of his colleagues by fitting various types of eyeglasses, and doing ophthalmologic examinations on his subjects. He found that in every case of artificially produced astigmatism, there was a distance where the subject could clearly and sharply see writing and other objects. This phenomenon, Dobrovolsky reasoned, could be produced only if the focal points of all the light rays entering the eye were exactly at the position of the retina. When the subject was not at this optimal distance from the eye, the focal points of the light rays entering the eye were either behind or in front of the retina, resulting in the blurring of vision. Dobrovolsky felt that astigmatism was due to the inability of the eye to accommodate to the various object distances, and proposed that this was due to the inability of the lens to change its shape. This, in turn, was due to an abnormality in the function of the ciliary muscle. He then presented a number of cases where proven changes in the physiology of the ciliary muscle were accompanied by astigmatism. Dobrovolsky was thus able to implicate correctly the lens and the ciliary muscle in the etiology of astigmatism, though he did not succeed in precisely defining the mechanism whereby this defect is brought about.

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[22] Robert Blessig, "Ueber die Veränderungen der Niere nach Unterbindung der Nierenarterie," *Virchow's Archiv*, 1859, *16*: 120.

[23] W. Dobrowolsky, "Beitrage zur Lehre von den Anomalien Refraktion und Accomodation des Auges," *Klin. Monatsbl. f. Augenheilk* , 1868, *6* Beilaghefte 1-2.

[24] W. Dobrowolsky, "Ueber verschiedene Veränderungen des Astigmatismus unter dem Einflusse der Accomodation," *Graefe's Archiv*, 1868, *14(3)*, 51-105.

Dobrovolsky's work on the physiology of the retina[25] was a follow-up of Voinov's theory of color perception.[26] Dobrovolsky found that the best color perception was in the center of the retina, and that it declined toward its periphery. The center of the retina was least sensitive to red, and the perception of the red, as well as of the green colors, was also weakest in the retinal periphery. The perception of the blue and yellow was strongest in the center of the retina, and the perception of these colors persisted at a high level toward the retinal periphery. However, the rates of decline of the perception of different colors were uneven in moving from the center of the retina toward its periphery: in the vicinity of the macula lutea on the inner surface of the retina (5° with respect to its center) the perception was 1/1.4, 1/2, 1/1.4, and 1/2.1 of that at the retinal center for red, yellow, green, and blue, respectively. Beyond this, however, the perception of red and green declined faster than that of the yellow and blue. Comparing the perception of blue and yellow toward the periphery of the retina, it was found that that of the yellow declined much more rapidly than that of the blue, so that at an angle of 90° with respect to the center of the retina, the perception of the blue was better than that of yellow in spite of a reverse relationship at the center of the retina and in the vicinity of the macula lutea.

The successor of Dobrovolsky at the Military Medical Academy was L. G. Bellarminov (1859-1930), a graduate of the Military Medical Academy (1886). One of his contributions was the construction of a manometric apparatus with a recorder and a cannula to be inserted into the eye for the purpose of measuring intraocular pressure.[27] With this apparatus, he found that intraocular pressure in animals was generally parallel to blood pressure, though in many cases there was a lag period between the change of blood pressure and that of intraocular pressure, or vice versa. Thus, the stimulation of the sympathetics elicited a rise in the intraocular pressure, which was then followed by a rise in blood pressure. There was no connection between intraocular pressure and eye movements.

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[25] W Dobrowolsky, "Ueber die Empfindlichkeit des normalen Auges gegen Farbentone auf der Peripherie der Netzhaut," *Graefe's Archiv*, 1875, *32(1)* 9-32.

[26] M. Woinow, "Beiträge zur Farbenlehre," *Graefe's Archiv*, 1875, *21(1):* 223-250.

The development of glaucoma following cataract operations had been described by Graefe in 1869; however, this complication had apparently escaped the attention of most ophthalmologists. The man who "rediscovered" this problem was K. Rumshevich, a Kiev University professor, who described several such cases.[28] He had to treat such induced glaucoma cases by iridectomy. Rumshevich was also a pioneer in the investigation of malignant tumors of the eye. For example, he described two cases of corneal sarcoma, whose origin was elsewhere in the body.[29]

As was mentioned previously, iridectomy was the favored treatment of glaucoma in the nineteenth century, and this operation was introduced into Russia by Froebelius. It was substantially improved by S. Logechnikov (1838-1911), a Moscow University professor and a sometime student of Arlt and Graefe[30] The operation, called iridosclerotomy, was described by Logechnikov in a Russian ophthalmological journal in 1889. Then in 1894, much to Logechnikov's consternation, Knies from Heidelberg claimed to have developed this procedure.[31] In the West, Logechnikov is probably best known for the discovery of a symptom characteristic of diffuse scleroderma.[32] He described a seventeen-year-old girl suffering from diffuse scleroderma, whose eyes were completely immobilized, i.e., no movement up or down or sideways could be accomplished. The eyes were otherwise completely normal, especially with respect to their accommodation functions. The patient recovered from her ailment, and the eye movements returned to normal. Logechnikov felt that this symptom was due to a disturbance in the structure of the eye muscles rather than being a problem of nerve function.

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[27] L. G. Bellarminoff, "Anwendung der graphischen Methode bei Untersuchung des intraocularen Druckes," *Pfluger's Archiv*, 1886, *39* 449-472.

[28] K. Rumschewitsch, "Casuistik des Glaukoms nach Staar-Operationen," *Klin Monatsbl f. Augenheilk.*, 1896, *34* 191-197.

[29] K Rumschewitsch, "Zur Casuistik der cornealen Neubildungen," *Klin Monatsbl. f Augenheilk.*, 1893, *31* 50-58.

[30] A. Natanson, "S. N. Logetschnikoff," *Centralbl f prakt Augenheilk.*, 1911, *35* 225-226.

[31] S Logetschnikow, "Eine Notiz zur neuen Behandlung des Glaucoms," *Klin Monatsbl f Augenheilk*, 1894, *32* 96-98

[32] S. Logetschnikow, "Ein seltener Fall von schwerer diffuser Sklerodermie," *Zeitschr. f. Augenheilk.*, 1903, *10*· 355-356.

One of the foremost eye pathologists of his time was Alexander Ivanov (1836-1880).[33] A graduate of Moscow University (1859), after study abroad, he was appointed to the chair of ophthalmology at Kiev University in 1869. Throughout his entire life, Ivanov was a sufferer from tuberculosis, and attempted to keep the disease in check by frequent trips to southern Europe. The last four years of his life (1876-1880) were, in fact, spent in Mentone, in southern France. According to Russian law, a professor could not absent himself from his post for more than four months without losing his job. However, an exception was made in Ivanov's case by the order of the Tsar himself, and he was permitted to retain his post at Kiev University until his death. Ivanov's reputation as an eye pathologist and pathological anatomist was so great, that investigators from all over Europe sent him enucleated specimens for pathological examination. As a result, Ivanov was able to make a number of original observations on the nature of such processes as the inflammation of the retina and the optic nerve, the anatomy and physiology of the ciliary muscle, the detachment of the vitreous body, and the development of Blessig's (also called Ivanov's) cysts. The detachment of the vitreous body was most frequently observed in eyes damaged by a foreign body.[34] In one typical case, the foreign body had brought about damage to the cornea, pus formation in both the retina and the choroid, and a degeneration of the nerve cells of the retina. The degenerated cells of the retina were replaced by connective tissue. The pus cells had originated from the blood vessels of the retina, and Ivanov proposed (correctly) that these were actually circulating leukocytes. The vitreous body was detached from the retina, except for a spot near the origin of the optic nerve. It was also infiltrated by pus cells. The space between the retina and the vitreous body was filled by a gelatinous exudate, which also contained pus cells. In several cases, the vitreous body contained abscesses in addition to the other pathological changes. Detached vitreous body was also observed by Ivanov in the absence of accidental injury, as, for example, in cataract operations, in myopia, and in tumors of the eye.

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[33] W. Dobrowolsky, "Alexander Iwanoff," *Klin. Monatsbl. f Augenheilk.*, 1881, *19* 218-220.

[34] A. Iwanoff, "Beitrage zur normalen und pathologischen Anatomie des Auges," *Graefe's Archiv*, 1869, *15(2)*. 1-107.

Ivanov provided a detailed description of the Blessig cysts, which he called edema of the retina.[35] The disorder did not favor any special age group, and was not localized in any specific topographical area of the structure. The cysts were present largely in the outer layers of the retina and were especially large in the outer and inner nuclear layers. The size of such cysts sometimes reached that of a pea. The smaller cysts were filled with a liquid rich in protein, the larger ones, with a gelatinous material. Ivanov thought that the development of the cysts of the retina was due to disorders in its capillary and venous circulation.

During Ivanov's absence from Kiev (1875-1880), his duties were carried out by Emannual Mandelstamm (1839-1912), who was born in Kovno in a Jewish merchant's family and studied medicine at Dorpat and Kharkov Universities.[36] His doctoral thesis was successfully defended in 1868 in St. Petersburg. Upon Ivanov's death, the faculty elected Mandelstamm to the chair of ophthalmology, but the University's administration did not approve the appointment, apparently because Mandelstamm was Jewish. His appointment, unfortunately, came up for review during the turbulent times following the assassination of Alexander II. This latter event was blamed, at least in part, on the Jews. Thereupon, Mandelstamm resigned his University appointment and opened a private eye clinic, where he practiced ophthalmology for a number of years. In examining a number of trachomatose patients (some 38% of the patients in his clinic were suffering from trachoma), Mandelstamm concluded that the basic trachomatose process appeared under several forms, which had previously been considered to represent separate disease entities (e.g., follicular catarrh, acute trachoma, chronic trachoma, etc.).[37] He felt that trachoma was a non-specific inflammatory process caused by the accumulation of leukocytes in the adenoids, and that methods for treating inflammations in general were applicable for the treatment of trachoma. Mandelstamm published a number of other reports, mostly in *Graefe's Archiv,* which dealt for the most part with individual case reports.

The last figure to consider is M. V. Voinov (d. 1875), who in 1874 proposed that color vision was the result of four fundamental color receptors in the retina: red, blue, green, and yellow.[38] Since Karl Hering proposed a similar theory at about the same time, and since Voinov's ideas were, by his own admission, quite similar to those of Helmholtz, it is not clear where exactly Voinov's work belongs in the historical course of events. In addition to his work on color vision and the physiology of the retina, Voinov was also concerned with the various aspects of optometry such as the determination of the strength of eyeglasses to be prescribed,[39] the causes of binocular vision, and the physiology of color blindness.[40]

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[35] *Ibid*

[36] Brogi, "Max Emanuel Mandelstamm," *Zentralbl. f prakt. Augenheilk.*, 1912, *36* 162-163.

[37] E. Mandelstamm, "Der trachomatöse Process," *Graefe's Archiv*, 1883, *20(1)* 52-102

[38] M. Woinow, "Beiträge zur Farbenlehre," 223-250.

It may be stated in conclusion that Russia in the late nineteenth century and early twentieth century had well-established research programs in the field of ophthalmology. Its practitioners were apparently highly competent individuals, who had frequent contacts with centers of ophthalmologic research in Western Europe, and who themselves were frequent contributors to ophthalmologic research literature. Unfortunately, it appears that ophthalmologic services were not readily available to the population outside the armed forces, the university centers, and the larger cities having hospitals with oculists on their staffs.

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[39] M. Woinow, "Zur Bestimmung der Sehschärfe bei Ametropie," *Graefe's Archiv*, 1869, *15(2):* 144-154.

[40] M. Woinow, "Zur Diagnose der Farbenblindheit," *Graefe's Archiv*, 1871, *17(2):* 241-248.

A NOTE ON THE HISTORY OF MEDICINE AND A DEBATE ON PARNASSUS

JOHN J. RENALDO

In 1700 Gaetano Tremigliozzi, letterato, academician and popularizer, published a book—the *Nuova stafetta da Parnaso.*[1] While he modestly stated the hope that his work would serve to summarize a debate which had recently taken place within the medical community, Tremigliozzi's perceptions, along with the misunderstandings and distortions, reveal much of his intellectual environment and what many people conceived to be good medicine. Tremigliozzi, who seems never to have engaged in anything resembling original medical research, prefaces the book with a declaration that he writes in response to a request from the Accademia degli Spensierati di Rossano.[2] Medical expertise apparently had little to do with the Academy's request, which originated in the success of an earlier and similar work by Tremigliozzi.[3] The Accademia hoped to find someone who could ably defend the work of one of its members, the physician Carlo Musitano.[4]

The appearance, during the seventeenth century, of a new figure, the letterato, altered the nature of intellectual controversy and inquiry. Differences of opinion which once had been limited to small audiences of professionals now became the province of literate men everywhere. The letterato, with his wide ranging interests and superficial preparation, expected to participate in every major, and most minor, controversies. To serve their need for information and to create a forum for their debates, the letterati founded numerous new academies. Regular academic meetings provided a place where the letterati could exchange ideas. The prac-

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[1] Gaetano Tremigliozzi, *Nuova stafetta da Parnaso circa gli affari della medicina* (Frankfurt. n p., 1700).

[2] The Accademia degli Spensierati di Rossano drew from the entire Italian peninsula for its membership and had earlier enjoyed the participation of Pope Alexander VII. During this period the Accademia sometimes met in the Chigi Palace in Ariccia The membership rolls also included Antonio Magliabecchi, Giovanni Maria Cresimbeni and Giambattista Vico.

[3] The earlier work, which I have not been able to locate, was the *Stafetta da Parnaso* (Rome. Tinassi, 1676), published under the psuedonym of Angelo Matteo Argizzi.

[4] Carolo Musitano, *Opera medica omnia,* 2 vols. (Venice: Bortoli, 1738), The reader is referred to this edition because it is a complete edition and the text was used in the preparation of this paper

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tice of multiple and overlapping membership prevented one segment of the intellectual community from becoming isolated. Indeed, the academies, and the practices which evolved in them, contributed substantially to the growth, in the eighteenth century, of the concept of the republic of letters. But in the seventeenth century the academies were fundamentally institutions of continuing education—that is, the letterati invented and possessed an institution in which they could collectively and continually investigate a particular problem or series of problems.[5] The seventeenth-century academic letterato moved with ease from poetry, to history, to mechanics or off to medicine.

Academies promoted the exchange of ideas within limited geographical areas, libraries supplied books, but the communication of ideas between major intellectual centers presented almost insurmountable difficulties. Correspondents, such as Henry Oldenburg in London and Antonio Magliabecchi in Florence, tried to bridge distances but it was the appearance, after 1660 of the journal that solved the problem once and for all. The *Philosophical Transactions,* and the *Journal des Savants,* among the first of their type, served as models. Before long they were joined by the *Giornale de' letterati di Roma* and the *Acta Eruditorum* of Leipzig as well as a number of others. Combing the journals, attending the academies, culling the libraries, the popularizer Tremigliozzi prepared himself to inform, and thus to serve, his fellow letterati.

When he accepted the commission to write the *Nuova stafetta,* Tremigliozzi faced a number of problems. Most fundamentally he had to simplify what was often a very complicated and technical argument. To achieve a degree of success with the letterati, Tremigliozzi sought a form of presentation which would allow a reader to understand both the particulars of the argument and the larger, but more abstract, issues involved.[6] The first thing Tremigliozzi did was to select a literary convention which was familiar to his readers. He chose to present the case for Musitano as a debate before Apollo on Mount Parnassus. Since Traino Boccolini had already used the fantasy of Apollo on Parnassus to resolve literary questions, there was nothing original in Tremigliozzi's setting.[7] Then too, the device of a fictionalized debate had an additional advantage. Tremigliozzi could summon well-known figures, such as Galileo and Bacon, to Parnassus and thus have them present their ideas in the way which best suited Tremigliozzi's purposes. Finally, a debate, like the Renaissance dialogue, allowed a reader to enter the discussion and to participate if he wished.

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[5] Although academies had existed in the sixteenth century, their number proliferated in the seventeenth century. See Michel Maylender, *Storia delle accademie d'Italia,* 5 vols. (Bologna: Capelli, 1926-1930). The first chapter of Eric Cochrane, *Tradition and Enlightenment in the Tuscan Academies, 1690-1800* (Chicago: The University of Chicago Press, 1961) contains an excellent summary of Seicento academic activity

[6] A later, and better known, example of the work of the popularizer is Francesco Algarotti, *Il newtonianismo per le dame, ovvero dialoghi sopra la luce e i colori* (Naples: n.p., 1737) The work was so popular it had, by 1739, been translated into French and English.

After he chose the form of presentation, Tremigliozzi then had to decide how he would introduce his reader to medical thought. In the preface he declares that he will defend "modern," or Hippocratic, medicine from the attacks of the practitioners of "old," or Galenic, medicine.[8] Exactly what Tremigliozzi meant by "old" and "modern" is not made completely clear at this point in the book, or for that matter, anywhere else in the work. It seems that he meant to use Galenic medicine to describe the form of medical thought most widely disseminated in the Seicento. Furthermore, Tremigliozzi thought of Galenism as an ineffective diagnostic tool because it was based upon metaphysical presuppositions. Hippocratic medicine, on the other hand, Tremigliozzi argues, promised to be an effective diagnostic tool because it was based upon the reality of experience. By dividing his problem into two, then labeling each half, Tremigliozzi used one of the more common tools of simplification at the disposal of the popularizer and thus facilitated his reader's comprehension of the debate that followed. Of course, the act of dividing and labeling blurred subtleties and distinctions that were vitally important to men such as Musitano and J. B. van Helmont. However, the contraposition of metaphysics and experience allowed him to place the medical problem in the larger context of Seicento Italy and further permitted him to associate modern medicine with Galileo immediately and implicitly. The association would later become explicit as well as intimate, yet remain superficial.

The debate opens with Tremigliozzi disposing of the necessary preliminaries as quickly as literary convention would allow. Apollo announces that he has summoned the parties to Parnassus because the situation in medicine is critical. Physicians can no longer diagnose fevers.[9] The traditional, or Galenic, techniques of diagnosis appear no longer to be effective and there are some physicians, Apollo tells the reader, who seem to have found an alternative diagnostic tool. He directs both sides to prepare their cases for immediate presentation before the Apollonian court.

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[7] Triano Boccalini, *I raguagli di Parnaso* (Bari, Laterza, 1910), edited by Giuseppe Rua.

[8] Tremigliozzi, *Nuova stafetta,* preface

[9] *Ibid.*, p 3.

Tremigliozzi then introduces the debating teams.[10] Galen himself leads the Galenists with assistance from Avicenna and other "sectarians." Hippocrates does not lead the Hippocratic physicians. Instead, van Helmont assisted by an interesting mixture of personalities that includes Galileo, Boyle, Harvey and Bacon, is the chief spokesman for modern medicine. Apparently Tremigliozzi chose van Helmont to lead the Hippocratic team because both he and Musitano agreed that diseases were entities of their own and must be dealt with as such. But the construction of the Hippocratic team had a larger significance. By simply listing the personalities, Tremigliozzi makes explicit his determination to link the cause of good medicine to the larger argument over the nature of the universe and knowledge. The letterato could immediately identify the familiar figure of Galileo, for many a symbol of intellectual and scientific modernity, with the more remote personalities and aspects of medicine. Bacon, Harvey and Boyle round out the team, although Harvey was an Aristotelian who sneered at Bacon's philosophy and Bacon heaped scorn on Aristotle.[11] Such fundamental differences of opinion seem to have bothered Tremigliozzi little and it is, in fact, highly possible that he was not even aware of the intellectual incompatibility of Bacon, Harvey and Galileo. Tremigliozzi knew Harvey as the man who had described the circulation of the blood. He knew Bacon as the man who had said "Nullius in verba." He uses Galileo to join the two when he has him assert that, "All my works are based on experience and I have used experience to unite my every argument."[12] Bacon argued for knowledge based upon experience, while Harvey used experience to arrive at his conclusions. To Tremigliozzi it was all very simple and quite straightforward.

The *Nuova stafetta* is, at least in part, a polemical work. Tremigliozzi jeers at and taunts those who would split philosophical hairs while the ill suffer. The Galenists are "sectarians" because they do not practice medicine. Instead of observing the ill, the Galenists chatter on about the accidental and substantial nature of disease. Indeed, Hippocrates, in one of his few statements, indignantly responds to the accusation of sectarianism. He says, "When, o sacred majesty, has it ever entered my mind to found a sect? My writings only consist of observations from which each man may draw his own conclusions and speculations."[13] Tremigliozzi returns repeatedly to the philosophizing of the Galenists. Late in the debate, for instance, he introduces Pierre Gassendi so that Gassendi may add the weight of his reputation to the side of Hippocratic medicine. Gassendi says of the Galenists, "But how can these people ever be good physicians, since they mean by good philosophy nothing more than the bloated dreams in which they believe. They have only memorized four sentences from Galen, along with a couple of scholastic metaphysical distinctions about form and matter, and accidental and substantial differences. These few concepts are the most aromatic parts of every brew they mix, they explain them in a thousand ways, apply them to every argument, and thus they become good philosophers and perfect physicians."[14]

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[10] *Ibid* , p. 25

[11] See Walter Pagel, "Harvey and Glisson on immutability, with a note on van Helmont," *Bull Hist. Med.* 1967, *41.* 497-514.

[12] Tremigliozzi, *Nuova stafetta*, pp. 150-151 "Signore, conforme tutte le mie opere sono fondate sopra l'esperienza, colla quale ho procurato unite i miei discorsi

As a practiced popularizer Tremigliozzi realized the need to push the debate away from a potentially boring discussion of medical minutiae. He focused attention on the more basic issue of the nature of medical knowledge. Thus he makes van Helmont say early in the book, "I will not even mention all the inventions of the moderns but I do want to point out that since you (Galen) never even saw a human cadaver you know about as much anatomy as a practicing butcher."[15] Thus Tremigliozzi affirmed an empirical position that was popular with his audience of Seicento letterati who frequently argued that artisans, rather than philosophers, knew much more about reality. After van Helmont's brief reference to anatomy and the related problem of description the debate proceeds to the more basic issue of diagnosis. Again it is van Helmont who is called upon to say, "Everyone knows that the whole idea of diagnosis is not yours (Galen) but really is Hippocrates.'"[16] The central question is to discover a way in which the physician can accurately and quickly diagnose a patient's condition. The particulars of the method are important in so far as they produce an efficacious result.

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[13] *Ibid.*, p. 138 "Quando mai o Sacra Maestà, mi passò per la mente il far Setta? I miei scritti solamente consistono in osservazioni, acciochè da questo ognuno s'ingegnasse a specolare da se ciò che gli parea; benche molte opere mi sono falsamente attribuite."

[14] *Ibid* , p 153 "Ma come possono costoro ben medicare, se niente intenti al vero modo di filosofare, gonfi di chimere, si credono, che coll'aversi imparati a mente quattro sentenze di Galeno, con due distinzioni scolastiche metafisiche di *formaliter, et materialiter, per se, per accidens,* che sono le cose più aromatiche d'ogni loro minestra, spiegandole in mille maniere, ed applicandole ad ogni argomento, sieno divenuti buoni Filosofi, e perfetti Medici."

[15] *Ibid* , pp 39-40 "Non parlo di tutte le invenzioni de' Moderni; ne voglio dirti, che non avendo tu mai veduto cadaveri umani, d'Anatomia n'hai saputo quanto saperne potea un prattico Macellajo "

[16] *Ibid* p 40 "Il modo di prognosticare ognun sa, che non sia tuo, ma d Ippocrate "

In order to determine the efficacious method for the physician Tremigliozzi insists that the physician rely on experience and observation. He frequently calls upon Galileo and Bacon to support the view that valid knowledge is founded upon experience. He attempts to transfer Baconian empiricism almost completely into medicine. He repeatedly refers to Bacon's motto "Nullius in verba," and declares that by it man will be freed from philosophical servitude to irrelevant and useless systems.[17] Again it is not clear what Tremigliozzi means by experience. Since the words for experience and experiment are the same in Italian, part of his obscurity is due to that linguistic reality. But the larger portion of Tremigliozzi's attack on Galenism appears to be rooted in a variety of anti-intellectualism. Hippocrates is such a good model because of his habit of patient contact and observation. If we were to rely entirely on Tremigliozzi's view of Galen, we would be forced to believe that Galen never left his lecture room. Quite simply Tremigliozzi apparently never intended to make a case for medical experiment, but he certainly intended to argue strenuously for physicians with medical experience.

Yet even urging physicians simply to observe medical phenomena was fraught with philosophical implications that Tremigliozzi had either to dismiss or to accept. He could not, for instance, argue for simple observation without implicitly raising philosophical spectres which frequently horrified his audience. As soon as Tremigliozzi introduced Hippocrates as the hero of a "new" medicine he immediately suggested atomism, and to many in the Seicento atomism meant theological, scientific, social and intellectual anarchy.[18] It is, therefore, no accident or simple literary device that brings Democritus into the debate as one of the moderns. Tremigliozzi's readers would have found it strange had he not done so and he would have seriously weakened his credibility. Clearly, in the mind of the letterati, Democritus, Hippocrates and a change in medical thought and practice were related. Hence when Apollo orders Democritus to speak, he "with a smile on his lips turns to Hippocrates and says, 'You will bear me witness, my very dear friend, that once when my head was filled with the foolishness of the Abderites, I came to you and you cured me of the madness that they had placed in me. You taught me to speculate only on nature and not to be found by the conclusions of my predecessors.'"[19] Atomism was, thereby, rendered harmless. In his characteristically casual fashion Tremigliozzi made atomism into the observation of natural physical reality. Thus, together with experience and observation, atomism would free the physician and allow him to function more efficiently.

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[17] *Ibid.*, pp. 27, and 164.

[18] It was quite impossible for many to disconnect natural philosophy from theology in the seventeenth century. The probably valid Jesuit insistence that Jansenist theology adapted easily to Cartesian mechanism only served to make others wary of any philosophical innovation. For an excellent statement on Cartesianism and the Jesuits see Jean Ehrard, *L'idée de nature en France dans la première moitié du XVIIIe siècle*, 2 vols. (Paris: S.E.V.P.E.N., 1963), vol. 2, p. 663. The following excerpt from the *Giornale de' letterati di Roma*, 1671, no 5: 81-2, serves to illustrate the concern with atomism in Seicento Italy. "La sua Filosofia (Epicurus) fu ne'secoli andati in grandissima riputation e stima, nella quale torna ad essere appresso. Molti tanti in Italia, che in Francia, Inghilterra, e altrove. Ma ripugnando ella in alcune cosa à principi della Fede cattolica, come nell'immortalità dell'Anima, nella produttione del Mondo fatto col concorso casuale degli Atomi, non vi manca in Roma chi con l'approvatione di persone riguardevoli per autorità e dottrina habbia pensato al modo d'espurgarla da simili errori che sono stati communi a tutte l'altre filosofie de' Gentili, e ridurla in forma che non offenda in niuna parte la purità della nostra Religione " See also George Hadzsits, *Lucretius and His Influence* (New York. Longmans, Green, 1935), p. 308

Toward the end of the debate Tremigliozzi introduces a few verses written by contemporaries who supported Musitano, abjured Galenism, ridiculed Peripateticism, and jeered at other forms of antiquated thought. The poetry provides a pleasant interlude for his reader and demonstrates Tremigliozzi's ability as a letterato and popularizer. Many of his readers probably nodded in agreement when Tremigliozzi justified including the poems on the grounds that well-written poetry exposes truths which are sometimes obscured by prose.[20] Furthermore a truth that could be expressed in poetry as well as prose was doubly proven. The obscurity of Galenism bothered Tremigliozzi, while the clarity of Hippocratic medicine attracted him. In one form or another, with one device after another, Tremigliozzi insisted that medicine be simple and thus be modern.

Modern medicine is simple and functional. It explains reality in terms easily comprehensible to all letterati. Tremigliozzi calls upon Galileo as the discoverer of a new mechanics not as a renowned astronomer. The absence of Galileo the astronomer is striking, but Tremigliozzi ignores the astronomer so that the case for new medical practice will be stronger still.

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[19] Tremigliozzi, *Nuova stafetta*, pp. 148-9. "Democrito commandato poi a parlare, colle risa su le labbra rivolto ad Ippocrate cosi disse. Siami tu testimonio, cio carissimo amico, quando una volta contante istanze degli Abderiti fosti a visitarmi, per curarmi della pazzia, in cui quegli sciocchi me stimavano in corso, e solo perche da me stesso lo attendea a speculare delle cose Naturali, senza legarmi al parere de' miei predecessori."

[20] *Ibid.*, p. 320.

Galileo's mechanics explained the physical realities of the human environment and that is what Tremigliozzi asks of the new medicine. He is not interested in whether the earth revolves about the Sun or the fever is caused by humors and biles. He wants physicians who can identify fever, not philosophers who talk about the essence of fever. He wants a physician who can treat a fever, not men who can theorize about its origins. Tremigliozzi brushed aside the considerable amount van Helmont and Musitano had to say about disease as an *ens* and insisted that physicians would be better physicians if they followed the examples of Hippocrates and Musitano. They should base their conclusions upon what they saw when they treated the sick. Tremigliozzi, and he was not alone, wanted physicians to stop talking about what good medicine might be and to start the practice of medicine in the sick room. The particulars of medical discoveries were not important to Tremigliozzi. The validity of each discovery would be judged in its success in treating the sick.

MEDICO-HISTORICAL NEWS AND ACTIVITIES

CORRESPONDENCE AND REPORTS

FIFTIETH ANNIVERSARY OF THE JOHNS HOPKINS INSTITUTE OF THE HISTORY OF MEDICINE

The Institute of the History of Medicine celebrated its fiftieth anniversary with a two day international symposium, October 17-18, 1979, held in the Tilghman Room, Turner Building, The Johns Hopkins University School of Medicine, Baltimore, Maryland. More than 130 people participated.

PROGRAM

Wednesday, October 17

9:00 a.m.	Lloyd G. Stevenson, Introductory remarks Genevieve Miller, Presidential Greetings from the American Association for the History of Medicine
9:10 a.m.	Paul F. Cranefield, *presiding* Erwin H. Ackerknecht, "Causes and Pseudocauses in the History of Diseases" Charles E. Rosenberg, Commentary
11:00 a.m.	Theodore M. Brown, *presiding* Nikolaus Mani, "Biomedical Thought in Glisson's Hepatology and in Wepfer's Work on Apoplexy" Robert G. Frank, Jr., Commentary

The Institute of the History of Medicine and the William H. Welch Medical Library Joint Session

2:00 p.m.	Lloyd G. Stevenson, *presiding* Janet B. Koudelka, "The Genesis of the Welch Medical Library and the Institute of the History of Medicine"
2:25 p.m.	Richard A. Polacsek, *presiding* Frank B. Rogers, "Origins of MEDLARS"
3:10 p.m.	Lester S. King, *presiding* Whitfield J. Bell, Jr., "Private Physicians and Public Collections: Medical Libraries In the United States before 1900"
8:00 p.m.	Jerome J. Bylebyl, *presiding* Walter Pagel, Greetings (on tape) Presentation of Sanford V. Larkey Memorial volume, *Health, Medicine and Mortality in the Sixteenth Century*, to Mrs Geraldine (Larkey) Henderson by Dr. Charles Webster on behalf of Pembroke College

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Film of Dr. William H. Welch, "Reminiscences of the Early Days of the Medical School"
Alpha Omega Alpha Videotape of Dr. Owsei Temkin, interviewed by Dr. Lloyd G. Stevenson

Thursday, October 18

9:00 a.m. Gert H. Brieger, *presiding*
Charles Webster, "Medicine as Social History: Changing Ideas on Doctors and Patients in the Age of Shakespeare"
Donald G. Bates, Commentary
11:00 a.m. John Z. Bowers, *presiding*
L. J. Rather, "On the Sources and Development of Metaphor in the Language of Western Medicine and the Medical Sciences"
2:00 p.m. Toby Gelfand, *presiding*
Jean-Pierre Goubert, "The Medicalization of French Society at the end of the *Ancien Régime*"
Caroline Hannaway, Commentary
3:45 p.m. Saul Jarcho, *presiding*
Loris Premuda, "The Influence of the Nineteenth-Century Vienna School on Italian Medicine: The Role of Padua and Trieste"*
Jerome J. Bylebyl, Commentary
6:15 p.m. Banquet
8:15 p.m. Robert S. Morison, Former Director for Medicine and Natural Sciences, The Rockefeller Foundation, "The Foundation Interest"

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* Paper read in his absence by Saul Jarcho.

INSTITUTE OF THE HISTORY OF MEDICINE

RETIREMENT OF MARIAN VARNEY AND JANET B. KOUDELKA

Two of the people nearest to indispensable to the Institute of the History of Medicine and the Welch Library recently retired and were feted in the Great Hall on June 21, 1979. Marian Varney, for seventeen years Administrative Assistant and Departmental Secretary in the Institute, and Janet B. Koudelka who started on the Institute level, descended to the Library, and afterwards rose again to the office of the *Bulletin of the History of Medicine* as the reinstated Assistant Editor after a period as Assistant Librarian, have served the two institutions with distinction, with joy and with general acclaim. They are pictured here with their husbands, as well as with Professor and Mrs. Temkin and Professor and Mrs. Stevenson. Drs. Temkin and Stevenson gratefully acknowledge that their work has been much augmented, the effectiveness of the Institute much enhanced, by

Mesdames Varney and Koudelka, who have managed them for years, and have helped students, faculty members and visitors with cheerful assiduity and informed good sense. Joy and good health in retirement we wish very warmly for both: never were good wishes better earned.

INTERNATIONAL SEMINAR

From September 17-19, 1979 an international seminar on the theme "The Town and State Physician in Europe from the Middle Ages to the Enlightenment" was held at the Herzog August Bibliothek, Wolfenbüttel, West Germany.

Scholars from 6 different countries read and discussed papers which surveyed the institution of the "public" physician in a variety of political and professional contexts (see program below). The seminar was organized by the British Society for the Social History of Medicine and its secretary, Robin Price.

The diversity of the papers cautions against any facile effort at synthesis. At the same time, however, it became evident that an overall explanatory framework was needed. Such an account might find bases for comparison in the density and types of medical practitioners in urban versus rural environments, professional and social structure, economic conditions, and political systems. Thus the vigor of the institution of public physician in ancient Greece and in medieval Italy seems to be correlated with a scarcity of reputable healers and even more with inadequate professional organization. In this situation, municipal officials and small city-states took the initiative in securing the services of a legitimate practitioner.

With the rise of the nation-state and a bourgeoisie, which demanded professional services of various kinds and provided professional men from its own ranks, private practitioners belonging to more or less autonomous medical groups (faculties, colleges, guilds) gradually superseded the public physicians. This appears to have been the case in renaissance Italy as well as in Spain, France, and England. Fee for service or some sort of essentially private contractual arrangement came into play to secure medical personnel for hospitals, legal functions, and public health. In central and eastern Europe, on the other hand, direct governmental control seems to have been more conspicuous than local professional activity, and here the institution of the public physician continued to thrive.

The above schema remains crude and tentative. Much more research at the local level and of an archival nature is needed. As the Wolfenbüttel conference showed, this research will take on meaning to the extent that it is comparative and placed in a broad socio-economic and cultural framework. To this end, international and interdisciplinary exchanges of scholars are essential.

The proceedings of the International Seminar are scheduled to be published in the *Wolfenbütteler Forschungen* series.

PROGRAM

Vivian Nutton (London): "Continuity or rediscovery? The city physician in classical antiquity and mediaeval Italy."

Ghada Karmi (London): "State control of the physician in the Middle Ages: an Islamic model."

Richard Palmer (London): "Physicians and the State in post-medieval Italy."

José Maria Lopez-Piñero (Valencia): "The medical profession in 16th-century Spain."

Toby Gelfand (Ottawa): "Public medicine, and medical careers in France during the reign of Louis XV."

Manfred Sturzbecher (Berlin): "Die Physici vom Mittelalter bis zur Aufklärung im deutschen Sprachgebiet."

Norbert Duka Zolyomi (Bratislava): "Die Entwicklung der antsarztlichen Institution im historischen Ungarn von Mittelalter bis zum Ende der 18 Jahrhunderts."

Huldrych Koelbing (Zurich): "The town and state physician in 16th to 18th century Switzerland."

TOBY GELFAND, PH.D.

ANNOUNCEMENTS

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE

Fifty-Third Annual Meeting

The fifty-third annual meeting of the American Association for the History of Medicine will be held in Boston, Mass., May 1-3, 1980. Headquarters will be the Park Plaza Hotel, 64 Arlington Street, Boston, Mass. 02117. The meeting will be hosted by the Boston Medical Library. The local arrangements committee is chaired by George E. Gifford, Jr. Other members are Mark Altschule, Ann Leason, Laverne Kuhnke, Dottie Keefer, Betty Goldsmith, Laura Gifford, Anne and Barry Wiedenkeller.

NATIONAL NEWS

Center for Photographic Images of Medicine and Health Care

Small Grants: To stimulate the development of materials for teaching the history of medicine and health care using photographs, the Center for Photographic Images of Medicine and Health Care will award several small grants to historians and to educators in medicine and other health professions. The Center is supported by a Higher Education Project Grant from the National Endowment for the Humanities. The grants in varying amounts up to $1,000, are intended to support research into photographic sources, duplication of photographic images, and production of a written text to accompany a unified collection of slide copies of the images selected. The history of medicine and health care may be defined broadly in regard to both subject matter and time. Proposals must be submitted by July 30, 1980. They should be no more than five (5) double-spaced pages.

Photographic Archives or Collections: The Center is seeking to locate older images (c 1850-1950) depicting medicine and health care, to be copied as slides for teaching the history of American medicine and health care. Of special interest are photographs of diagnostic or clinical activities, photographs which document public health or personal hygiene, portraits of health professionals in action or of physician-patient interactions, and images of women and minorities in medical careers and as patients. Any information about private persons possessing such material or about images in institutional collections or rare books or journals would be appreciated. Please address correspondence about grants or photographs to: The Center for Photographic Images, Department of Community and Preventive Medicine, School of Medicine, Health Sciences Center, State University of New York at Stony Brook, Long Island, New York 11794.

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Cleveland

On October 31, 1979 the Howard Dittrick Museum of Historical Medicine and the Program in the History of Science and Technology of Case Western Reserve University sponsored a lecture by Dr. Stanley Joel Reiser on the topic "The Machine in the Consulting Room."

Fulbright Alumni Association

The Third Annual Fulbright Alumni Association Convention will be held on the Berkeley Campus of the University of California on September 4-6, 1980. For further information, please contact Professor W. Goldsmith, Convention Management Chairman, Department of Mechanical Engineering, University of California, Berkeley 94720.

Medical College of Pennsylvania and Hospital

The Medical College of Pennsylvania announced the appointment of John H. Ellis, Ph.D., as Visiting Fellow in the Humanities for 1979-80. The Fellowship is sponsored by the Teaching Program in Human Values in Medicine, a section of the Department of Community and Preventive Medicine. One of the major purposes of the Fellowship is to develop interdisciplinary teaching in the humanities for medical students. Dr. Ellis will initiate an elective course, "Themes in the History of Medicine" during his Fellowship Year. Professor Ellis, who is Professor of History in the Department of History, Lehigh University, Bethlehem, Pennsylvania, received his graduate and postdoctoral training in the history of medicine and public health at Tulane University. His teaching and research interests are focused on social aspects of nineteenth-century medicine and public health, and he has published in these areas.

Miami

On November 7, 1979 the Associates of the Louis Calder Memorial Library of the University of Miami sponsored an evening in tribute to Sidney Licht, M.D. in the History of Medicine Room, Dr. Licht was a recognized authority on physical medicine and rehabilitation. During the last years of his life, Dr. Licht served as Curator of Eponyms on the Voluntary Faculty of the Library. The program included a lecture by John Romano, M.D., distinguished University Professor of Psychiatry, University of Rochester School of Medicine and Dentistry, on the topic "Teaching Medical School Students Psychiatry: Does it Have to Get Worse Before it Gets Better?" and a song recital by Gloria Beniades.

Midwestern Historians of Medicine

An informal meeting of midwestern historians of medicine will be held in Madison, Wisconsin on March 29, 1980. Speakers include Martin S. Pernick, "The Social Politics of Pain in 19th Century America"; Barbara S. Melosh, "Public Health, Nursing and the Gospel of Health, 1920-1955"; John M. Eyler, "Population, Poverty, and Disease: Observations on the Medical Face of Victorian Liberalism"; William Coleman, "Prostitution and the Numerical Method: Paris in

1836. : For information contact Dept. of the History of Medicine, University of Wisconsin, 1305 Linden Drive, Madison, Wisconsin 53706.

Smithsonian Institution

The Medical Sciences Area of the National Museum of History and Technology, Smithsonian Institution, sponsored a symposium on *Folk Medicine: Alternative Approaches to Health and Healing* as part of the Folklife in the Museum Program on September 29-30 1979. In addition to the papers, traditional healers, curers, and herbalists demonstrated their preparations.

Symposium on the History of Tropical Dermatology

The symposium was held on September 26, 1979 as part of the Fourth Congress of the International Society of Tropical Dermatology in New Orleans, Louisiana. The program listed the following papers: "Thoughts on the History of Dermatology," Lawrence Charles Parish; "What is Tropical Dermatology? An Historical Account," Orlando Canizares; "Tropical Dermatology and the 1907 International Congress of Dermatology," Lawrence Charles Parish; "Dermatology on Galveston Island at the Turn of the Century," Edgar B. Smith; "Aldo Castelani, as I Remember Him," Kasuke Ito; "William Tilbury Fox (1836-1879): His contribution to Tropical Dermatology," Arthur Rook; "How Old is Leprosy," Stanley G. Browne; "How The Indeterminate Form of Leprosy got its Name," Harry L. Arnold; "Tokelau: Historical and Anthropological Perspectives, "John E. Wolf, Jr.; "The History of *Trichomycosis Axillaris,* "John Thorne Crissey; "Cutaneous Larva Migrans: An Historical Perspective, "Rodney C. Jung; "The International Society of Tropical Dermatology in Perspective," Samuel B. Frank.

University of Minnesota

John M. Eyler, Ph.D., has been promoted to Associate Professor in the Department of History of Medicine, University of Minnesota, Minneapolis.

Waring Library Society

On October 9, 1979 the Waring Library Society of the Medical University of South Carolina unveiled a bronze relief portrait of Joseph Ioor Waring, M.D., Litt.D. (1897-1977) in a ceremony at the Administration-Library Building of the University. A gift to the Society by the Honorable Nancy Stevenson, daughter of Dr. Waring and Lieutenant Governor of South Carolina, who officially did the unveiling, the plaque was sculptured by Willard Hirsch, noted Charleston artist. Dr. S. Hope Sandifer, president of the Waring Library Society, presided at the ceremony, and Dr. William H. Knisely, president, accepted the plaque on behalf of the Medical University. Dr. Albert B. Sabin, Distinguished Research Professor of Biomedicine, spoke a few words about Dr. Waring and his contributions to historical research. "Were it not for Joe Waring, very little would be known about the medical history of South Carolina," Dr. Sabin commented. Dr. Joseph Waring, a former pediatrician and editor of both medical and historical journals, was the author of a three volume history of medicine in South Carolina and had contributed many articles to journals on pediatrics and medical history.

The Waring Library Society was founded in 1977 before Dr. Waring's death under the auspices of the Health Sciences Foundation of the Medical University. It launched its first membership drive in 1978 in memory of Dr. Waring with the purpose of assisting in the development and growth of the Waring Historical Library. At its first annual meeting in March of 1979, Dr. George E. Gifford, Jr. of Boston presented a paper on "Audubon and His Charleston Physician Friends."

PROGRAMS OF MEETINGS

College of Physicians of Philadelphia

December 19, 1979: "The Gram Stain and the Quellung Reaction: The Development of Critical Microbiological Techniques," Robert Austrian.

George W. Corner History of Medicine Society, Rochester, N.Y.

September 25, 1979: "Cabot, Peabody, and the Care of the Patient," T. Franklin Williams.

October 23, 1979. George W. Corner, M.D. Videotape interview by Gordon Meade.

November 27, 1979: "Harvey Cushing as a Pathologist," Joseph McDonald.

December 18, 1979: J. Lowell Orbison, M.D. Videotape interview by John Romano.

January 22, 1980: "Why the Mind is in the Head: Plato vs. Aristotle," Maurice H. Charlton.

February 26, 1980: Nolan Kaltreider, M.D. Videotape interview by Priscilla Cummings.

Handerson Medical History Society, Cleveland, Ohio

February 12, 1980: "The Life of Doctor Norman Bethune: Soldier, Surgeon, and Socialist," Paul G. Dyment.

March 4, 1980: "The Life and Contributions of Doctor Thomas Young," Edward Pershey.

April 8, 1980: "Books of Herbals," Allan A. Schulte.

Leaders in American Medicine—Francis A. Countway Library of Medicine, Boston, Mass.

March 12, 1980: Ivan Petrovitch Pavlov, M.D. (1849-1936), Film, Discussants: Peter B. Dews, John R. Pappenheimer, B. F. Skinner.

April 29, 1980: Sir William Osler, M.D. (1849-1919), Slide presentation by Charles G. Roland, Discussants: Daniel C. Tosteson, William B. Bean.

Marshfield Medical History Club, Marshfield, Wis.

September 24, 1979: "Important Books Illustrating the History of Medicine," W. Bruce Fye.

December 3, 1979· "The Introduction of the Concept of Active Euthanasia into American Medical Thought," W. Bruce Fye.

Mayo Foundation History of Medicine Society, Rochester, Minn.

January 2, 1980· "Dr. Samuel Johnson and his 'vile melancholy,' " Howard P. Rome; "Chekov the Physician," Edmund C. Burke.

Paul Dudley White Medical History Society, Boston, Mass.

November 7, 1979: "An Amateur's Approach to the Writing of Medical History," Elmer O. Cappers.

Society of Medical History of Chicago

December 5, 1979. "Measurement in Medicine with a Look at Sanctorius of Padua," Jeffrey Levett.

Univeristy of Virginia Medical History Society, Charlottesville, Va.

November 20, 1979: "Otolaryngology: Its Development in the School of Medicine, University of Virginia, 1896-1977," G. Slaughter Fitz-Hugh.

December 11, 1979: "The Enigma of William Osler," William B. Bean.

Washington Society for the History of Medicine, Washington, D.C.

November 15, 1979: "From Man to Silkworm: the History of the Department of Embryology at the Carnegie Institution of Washington," Frank Portugal; "U.S. Naval Hospital Ships: Selected Historical Vignettes," Alexander Adler.

Washington University School of Medicine History of Medicine Club, St. Louis, Missouri

February 14, 1979: "The Myth of the Honored Physician," Gerald Perkoff.

March 15, 1979: "Reform of American Medical Education, 1870-1920," Kenneth M. Ludmerer.

October 2, 1979: "Charles Saint-Yves (1667-1736): Insights Overlooked," Bernard Becker.

November 8, 1979: "The Road Not Taken: Women Physicians, Co-Education, and the Struggle for Professional Standards in 19th-Century American Medical Education," Regina Morantz.

NEWS FROM ABROAD

England

A conference on the topic of *Galen· Problems and Prospects* was held at Selwyn College, Cambridge on September 11-15, 1979. The conference was sponsored by the Classics Faculty and the Committee for the History and Philosophy of Science, Cambridge University, with the support of the Wellcome Trust. The organizing committee was Dr. A. Z. Iskandar, Dr. G. E. R. Lloyd and Dr. V. Nutton, who acted as secretary. It is hoped that the proceedings of the conference will be published in late 1980.

International Congress of the History of Medicine

The 27th International Congress will take place in Barcelona, Spain, August 31-September 6, 1980. Congress topics include "The History of Psychiatry and of Psychoanalysis," "The Influence of Iberian Medical Emigrants," "The History of Medical Translations," "The Development of Naval Medicine," and "Avicenna." Requests for further information about attendance and the presentation of papers should be addressed to Dr. José Danón, Secretary of the International Congress of the History of Medicine, Académia de Ciéncies Médiques de Catalunya i Balears, Paseo de Bonanova, 47, Barcelona—17, Spain.

South Africa

The Adler Museum of the History of Medicine, University of the Witwatersrand, Johannesburg, sponsored three lectures in October, 1979 by Professor Thomas F. Keys. Professor Keys spoke on "The History of Surgical Anaesthesia," "Sir Humphrey Davy and his Safety Lamp for Coal Miners," and "Stained Glass Windows of the Mayo Foundation."

Switzerland

The Swiss Society for the History of Medicine and the National Sciences held its annual meeting in Lausanne on October 4-7, 1979. The Society announces that the Henry E. Sigerist Prize, established by the biochemist Markus Guggenheim-Schnurr and his wife in 1968, has been awarded for 1979 to Dr. François Ledermann. Dr. Ledermann's doctoral thesis was prepared at the Faculté des Sciences Pharmaceutiques et Biologiques at the Université René Descartes in Paris, and is entitled, *La dispensation des médicaments dans le canton de Neuchâtel (Suisse) 1930-1960.*

University of Toronto

Gale Moore, Book selector for the Life Sciences in the University of Toronto Library, has produced a bibliography entitled *A Guide to the Literature of the History of Medicine* (Toronto: John P. Robarts Research Library, 1979), Reference Series No. 24, v +146 pp, $5.00. Copies can be ordered from the Reference Department of the Library, University of Toronto, Toronto, Ontario, Canada, M5S 1A5.

University of Toronto

On November 6, 1979, the Faculty of Medicine and the Institute for the History and Philosophy of Science and Technology sponsored "A Seminar on the Clinico-Historical Approach to Psychiatry" by Dr. Richard Hunter.

Death

The Bulletin regretfully notes the death in Brno, Czechoslovakia on September 6, 1979 of the physiologist and medical historian, Dr. Vladislav Kruta. Dr. Kruta was a dedicated scholar with an especial interest in J. E. Purkyně. He had been an invited speaker at The Johns Hopkins Institute of the History of Medicine in December, 1966.

BOOK REVIEWS

RONALD L. NUMBERS. *Almost Persuaded: American Physicians and Compulsory Health Insurance, 1912-1920.* Baltimore and London: Johns Hopkins University Press, 1978. (The Henry E. Sigerist Supplements to the *Bulletin of the History of Medicine,* New Series, No. 1). xii + 158 pp. Ill. $10.00

The abortive effort to establish health insurance in the United States during World War I is fairly well known to public health and medical historians, although the only thorough account of any aspect of it is Arthur Viseltear's excellent study of the movement in California. Ronald Numbers has written what undoubtedly will become the authoritative work on the subject. He begins with a brief picture of health care in the early 20th century, one which clearly demonstrates the inadequate care available to the lower income workers, and follows with a short account of the status of the medical profession. At that time laboratories and hospitals had not yet achieved a major role in medical care, and the highest concentration of physicians was found in small towns in the western states. While many of them were poorly recompensed, Numbers suggests that well-trained physicians had higher incomes than professors and ministers.

The movement for health insurance was greatly influenced by developments in Germany and Great Britain during the late 19th and early 20th centuries. These years coincided with the Progressive Movement in the United States, a movement which sought to achieve social justice via a wide range of legislative measures at all levels of government. In 1912 when Theodore Roosevelt broke with the Republicans and formed the Progressive Party, a major plank in his platform called for complete social insurance covering health, unemployment, and old age. The specific group most active in promoting health insurance was the American Association for Labor Legislation, a body which included many outstanding academicians. After successfully pushing through a federal law compensating workers for industrial accidents, the group turned its attention to health insurance. To assist in drawing up legislation, the committee sought help from three prominent figures in the health field, Alexander Lambert, S. S. Goldwater, and Lillian D. Wald.

The AMA, reorganized and strengthened in the pre-World War I years and influenced by the Progressive Movement, was actively promoting a variety of reforms—medical education, public health, food and drug laws, and so forth. *JAMA* and other medical journals concerned with the problem of the distribution of health care sent observers to look at the German and British health insurance programs. Those editors who passed judgment on the subject either favored health insurance or seemed to feel that it was inevitable and that the American medical profession could benefit by avoiding the weaknesses in the German and British programs. For example, in June of 1916 President Rupert Blue of the AMA spoke of compulsory health insurance as "the next great step in social legislation."

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This same year the governors of New Hampshire, Wisconsin, and Nevada expressed support for health insurance, and resolutions favoring it were introduced into the legislatures of New York, Massachusetts, Pennsylvania, and California. Just as the lengthy process of legislative enactment began, America entered World War I, drastically altering the situation. In the ensuing years the opposing forces mounted a highly organized attack, and within three years the health movement collapsed. A major factor in its defeat, as the author notes, was the dramatic change in the attitude of American physicians between 1916 and 1920.

After discussing the various theories put forth to account for this shift, Numbers wisely points out that no single explanation can account for it. The first of the three chief factors which he believes turned physicians from support or neutrality to firm opposition was the improvement in physicians' incomes directly resulting from the war, which made health insurance far less attractive. For example, the average income of taxed physicians in Wisconsin rose 41 percent between 1916 and 1919. Second, the medical profession discovered that health insurance was not inevitable, and third, that their experience with the newly created workmen's compensation laws under which commercial insurance companies paid the lowest possible fees embittered many physicians. In the course of his study Numbers also points out that the opponents of health legislation capitalized on the anti-German propaganda of World War I and the anti-communist feeling following the Bolshevik Revolution in Russia. The one point he might have stressed was the end of the Progressive Era itself. The movement had run its course prior to America's entrance into the War, and the ensuing conservative reaction was scarcely conducive to innovative legislation. This latter is a minor point, however, and in no way detracts from this fine book. It is a welcome addition to medical history.

Reviewed by JOHN DUFFY, Ph.D., Priscilla Alden Burke Professor of History, University of Maryland, College Park, Md.

W. S. CRAIG. *History of the Royal College of Physicians of Edinburgh.* Oxford: Blackwell Scientific Publications, 1976. xxix + 1125 pp., Ill. $105.00.

The approaching tercentenary of the Royal College of Physicians of Edinburgh prompted the commission of a new and comprehensive history of this prestigious medical institution. Written by one of their members, the late Professor W. Stuart Craig, the voluminous work contains an impressive amount of information on the affairs and the members of the College. After a series of attempts beginning in 1617, the College received its Royal Charter on November 29, 1681. Opposition from surgeons fearful of medical encroachment and resistance from outside Edinburgh to a College of Physicians of Scotland played major roles in the abortive efforts to obtain official status. Soon after its establishment, the College initiated a service of medical care for the poor, transferred in 1749 to the Royal Infirmary of Edinburgh. Another early activity of the College was the compilation and printing of an *Edinburgh Pharmacopeia* in 1699. This highly successful document went through twelve subsequent editions until 1841.

The nefarious effects of the Industrial Revolution on health conditions gradually involved the College in problems lying outside strictly professional interests. Proliferation of "fevers" and the periodic appearance of cholera fostered cooperation with the Town Council. Vaccination campaigns, hospital care, and reforms in the treatment of the insane benefited from advice and often financial support furnished by the College.

Craig's narrative includes several chapters on the interprofessional feuds with surgeons and apothecaries. The triangle "College," "town," and "gown" receives considerable attention, especially the 19th-century antagonisms regarding extramural medical education and medical reform. The final chapters describe the College's 20th-century activities, including its involvement in both World Wars, establishment of a National Health Service, and far flung overseas links, especially with members in India, Pakistan and Sri Lanka. In 1972, for example, the College had 913 members and fellows in India, just about 36 precent of its entire foreign membership and only slightly less than the 923 members listed for England.

As Craig remarks towards the end, the Royal College of Physicians of Edinburgh has played an important role for almost three hundred years in the life of Edinburgh and Scotland, adjusting to dramatic social and scientific changes which catapulted medicine into the forefront of activities deemed useful. Above all, the institution nurtured medical professionalization. Common interests created strong bonds between members, which were cemented at convivial meetings and traditional ceremonies.

While highly useful as a sourcebook for College-related activities, the book has certain flaws. Lip service is paid to general social and intellectual factors. A brief initial chapter mentions something about epidemics, urban problems of crowding, sewage disposal and housing, covering nearly three centuries in a few paragraphs. Instead of weaving the story of the College into the social context, this arrangement has further isolated the narrative.

The thirty-seven chapters break down the various activities of the College and most of them unfold chronologically. Thus, the reader gets a picture of the library, the activities of the fellows, and links with universities, in an excessively compartmentalized fashion. A general overview is difficult to obtain for any given historical period until one has read the entire book.

Superbly printed, this work contains many illustrations and thirteen appendices which reprint original documents and list all Honorary Fellows and Office Bearers. A name and general subject index significantly enhance the value of this book.

Reviewed by GUENTER B. RISSE, M.D., Ph. D., Professor of the History of Medicine, University of Wisconsin Center for Health Sciences, Madison, Wis.

ELISABETH BENNION. *Antique Medical Instruments*. Berkeley: Sotheby Parke Bernet and University of California Press, 1979. xii + 355 pp. Ill. $65.00

Written for medical instrument collectors, this book reflects the present escalating interest in and unsophisticated state of the study of medical instruments. This large format volume contains 380 black and white photographs and 16 pages of color photographs of a variety of surgical and other instruments, both related and unrelated. The instruments selected were made and used in Europe from the Middle Ages until 1870, hence the word antique implies, as it customarily does for dealers and collectors of furniture, silver and other precious objects, any item produced in the 19th century or earlier. Antique does not imply, however, a heritage stemming from the period of antiquity during which Greek and Roman medicine flourished, since almost none of the instruments from this period are available except in a few Italian museums or as reproductions. The handsomely photographed instruments are to be found in a variety of European museums with only about ten objects representing the unique Wellcome Historical Medical Museum Collection. The Wellcome Medical treasures are yet to be published. Those museums which are not so well known for their "antique" medical instruments, especially to Americans, are the Castle Museum, York; University College Hospital Medical School, London; Pitt-Rivers Museum, Oxford; Ramstein Collection, Basle; Sheffield City Museum; Musée d'Histoire de la Médecine, Paris; Musée le Secq des Tournelles, Rouen; the Royal Army Medical Corps Museum, Aldershot; and the Museum of English Rural Life, Reading, which contains a rich collection of veterinary instruments, some of which remain unidentified. The author herself collected the impressive instruments which are attributed in the book to Simon Kaye, Ltd. London. Simon Kaye is primarily a dealer of antique silver and other precious collectibles. In several special exhibition sales in London many of these medical items were sold to collectors and museum representatives fortunate enough to have been invited to participate.

The striking features of the book are its pictures and list of instrument makers. Once the appetite is whetted by the sharp, detailed pictures of well known, less known, and relatively unknown objects, the urge to identify inventors, makers, and actual users leads the reader to an appendix of over three hundred instrument makers. Instrument makers were identified from instruments, from the partial lists of Wynne Davies and Raymond Russell and by Mrs. Bennion's search through British libraries and directories. The Russell papers in the Royal College of Surgeons do not reflect the vast knowledge which Mr. Russell possessed, who had he lived, probably would have provided the most comprehensive directory of surgical instrument makers. The Directory in this book includes entries of makers who are documented through trade catalogues, advertisements and the instruments. It should prove to be a useful guide for collectors of British and Continental medical equipment. The Directory should spur others on to make it more complete and enlarge its scope to include the post-1870 period as well as American makers and manufacturers.

Much may be said in praise of the quality of the illustrations and format of the book as well as for the identification of instrument makers and present locations of historical medical instruments; however, the historian of medical instruments finds many statements which were better left unpublished. The text is superficial, and perhaps this is to be expected from such a lavishly illustrated book which offers so much visual information for the learned collector. Yet, I believe it is not unreasonable to expect that statements should be accurate and useful when sources exist, especially in such an attractive and expensively produced book.

Historical inaccuracies occur too frequently. First there are the blatant ones like the confusion of Ambroise Paré and William Harvey on p. 111 and the substitution of William Babbage for Charles Babbage on p. 148. (In both instances, the English author does not give the English pioneers their due.) The binaural stethoscope is a Cammann type, not a Canimin as appears on p. 167.

Instances of naive assessment appear like the claim that one year after Lister's first paper was published, the Maw Instrument catalogue (of 1868) still advertised trocars which could be put away after use without being wiped clean. Threading through the text is a refrain about the pain inflicted by these older medical instruments which is wearying. For example on p. 144 operations on the eye were claimed in 1764 to be impossible for children to bear and the author adds that "many an adult today might feel they would have the same trouble." At the same time, opportunities for further comment are not taken advantage of as well as they might be. Thus the opportunity is missed for an expanded discussion of the conditions surrounding Paré's son-in-law's invention of the haemostatic clamp which replaced treatment of wounds that were formerly covered with boiling oil. The captions for the illustrations are not always clear such as on p. 164; Which one is the spine wrench? For what purpose was this used? One puzzle was solved for me in the illustration of the branding tool shaped in the form of the letter "D" which we are informed was applied to all British Army deserters until 1871. Other comments are unfortunate such as the statement that "not many women wish to have their breasts amputated to save it from the bowstring as the Amazons did" to illustrate the point "that many conditions experienced by our forebears made treatment necessary that would not occur so often today" (p. 2). Indeed, the bowstring is no longer a hazard but breast cancer is a much greater threat to life and has led to many amputations, not only of breast tissue but surrounding musculature and other tissues to the extent that the earlier operation appears relatively simple.

A good case could be made for omitting most of the text and providing fuller captions (legends) for each photograph. The scintillating tidbits would stand out and relate more directly to the instruments. Such facts include the information that there were male and female "soldier suckers" who sucked the wounds of soldiers on the seventeenth- and eighteenth-century battlefields; that the axilla thermometer was designed to be read from a position in the back of the patient; and that the surgeon James Syme maintained his dexterity by sharpening pencils and shaving with this left hand.

The most important questions raised by this book are those relating to medical instrument collectors and collections. What constitutes a rare medical instrument or antique? Should private collectors be encouraged to find and keep rare medical items? Should these be given to museums, and if so, what is the obligation of the museum to make these instruments known to the lay and professional public?

It was the intention of the author to stimulate interest in medical instrument collection, undoubtedly this goal will be reached—but it remains a challenge for scholars to assess these instruments and for museums to bring their extensive holdings before the public in meaningful ways.

Reviewed by AUDREY B. DAVIS, Ph. D., Curator, Division of Medical Sciences, Museum of History and Technology, Smithsonian Institution, Washington, D.C.

HANNAH S. DECKER. *Freud in Germany: Revolution and Reaction in Science, 1893-1907.* New York: International Universities Press, 1977 (Psychological Issues, vol. 11, no. 1, monograph 41). xi + 360 pp. Ill. $15.00

In the first year of their correspondence (1907) Freud wrote Jung of the "long years of honourable but painful solitude . . . the indifference and incomprehension of my closest friends" that followed his discovery of psychoanalysis.[1] Similarly, Jones tells us, "In the first years of the century Freud and his writings were either quietly ignored or else they would be mentioned with a sentence or two of disdain as if not deserving any serious attention."[2] Statements such as these have too often been accepted uncritically and the myth has grown up that either psychoanalysis in its early years was largely ignored or even when its existence was acknowledged, that it met with a hostile reception.[3] Although many have suspected that this view was oversimplified, no one has undertaken the intensive and systematic study needed to dispel the myth. In her recent book Hannah Decker has corrected this omission by discussing the development of psychoanalysis in Germany during the years 1893-1907.

Decker has ended her account in 1907 because that was the year when Freud's disciple Abraham opened his practice in Berlin and because Freud himself cited that year as ending the first phase of the history of psychoanalysis. Her book is divided into three sections: "German Medicine and Psychoanalysis," "The New Psychologists and Psychoanalysis," and "The Educated German Public and Psychoanalysis."

For her first section Decker has thoroughly searched the periodicals, monographs, textbooks, and records of medical meetings and congresses of the period to give the reader a detailed account of the reaction of German neuropsychiatrists to Freud. The critics encountered include such notables as Kraepelin, Oppenheim, Ziehen, Mobius, and Strumpell. Freud and Breuer's very first and very short paper, "On the Psychical Mechanisms of Hysteria" (1893) attracted not unfavorable comment from such authorities as Lowenfeld and Oppenheim. Then, with the publication of *Studies on Hysteria* in 1895 medical discussion began in earnest and "after 1900," Decker tells us, "hardly a month went by without some major psychiatric or neurological journal containing some reference to Freud . . . Freud was taken as a serious worker in the fields about which he wrote. This is readily seen from the numerous lists of authorities with which it was the custom of many authors to introduce a subject; So and so are considered to be the major workers in this area. In these inevitable lists, Freud's name joined those prominent persons whose place at the time, and often in history as well, is secure" (pp. 175, 177).

Decker demonstrates that Freud's work was not ignored, and that he had his advocates as well as detractors. Some espoused wholeheartedly all of Freud's ideas (e.g. Eulenberg and Ehrenfels) and some were consistent and vociferous opponents (e.g. Aschaffenburg). "More typical than uncritical acceptance or glowing praise of the sexual theories was the 'Yes, but . . .' reaction. This was common in men like Bleuler, Bloch, and Lowenfeld" (p. 96). For example, Bleuler reported that "at our hospital the Freudian theories have been confirmed in many thousands of individual symptoms [and] . . . we daily see sexual roots, in Freud's sense, in the symptoms of dementia praecox, and only exceptionally find other causes, and then only as secondary factors . . . [Yet, though] sexual matters play a very important part, they perhaps do not so completely dominate the symptomatology as one might believe from reading Freud's works . . . " (p. 98).

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[1] *The Freud/Jung Letters*, ed W. McGuire, (Princeton: Princeton Univ. Press, 1974).

[2] Ernest Jones, *The Life and Work of Sigmund Freud*, 3 vols. (New York: Basic Books, 1953-1957), vol. 2, p. 360.

[3] *Ibid*

The majority of German psychiatrists were selective in using Freud's concepts and felt compelled neither to accept nor reject psychoanalysis *in toto*. His most applauded ideas were those of "conversion" and "abreaction." The least accepted seem to have been his dream theories, his treatment methodologies, and his ideas on obsessional neurosis. Freud's ideas on the unconscious, sexuality, and the psychogenic origin of hysteria had a mixed reception and were accepted unreservedly by only a minority.

Another assumption which Decker attacks in her book is that all of the opposition to Freud's sexual theories was based on unconscious resistances in the critics. Although she admits that there were cases of this (most notably Aschaffenburg), she asserts that "By far the majority of those who rejected the sexual views were dispassionate and matter-of-fact in their expression." Like Bleuler, many would accept the importance of sexuality, but then add that Freud has gone "too far."

Even though Decker has taken pains to dispel the myth that Freud was totally ignored or rejected, she by no means argues that there was any general acceptance of his theories by German doctors. There were several, very considerable, historical factors militating against an early and easy approval of psychoanalysis by German psychiatry. Among those which Decker enumerates are: a reaction against the speculativeness of the preceding romantics, idealists, and nature-philosophers; an extreme materialist and organicist bias; psychiatry's jealousy of its recently won medical respectability and a fear of jeopardizing this by espousing what appeared to be unscientific theories; the German view of hysteria, the subject of much of Freud's early investigation, as a non-Germanic (especially French) degenerative disease. Added to these difficulties were several furnished by Freud and his followers: Freud's custom of not responding to critics and not attending medical congresses was viewed as arrogant; many analysts tended to write off all opposition as "unconscious resistance" thus infuriating many; some analysts heightened antagonism "by rejecting the interest and support of physicians who were willing to accept only part of the psychoanalytic corpus" (p. 186).

Part II of Decker's volume explores the response of academic psychology to Freud. In contrast to the physicians, whose reaction to psychoanalysis seemed to vary according to their familiarity with its concepts, the psychologists' reaction did not. "Freud's works were consistently reviewed in the leading experimental psychology journal but with only a few exceptions his ideas were not discussed in the texts, monographs, or at meetings" (p. 193). Decker attributes this to several factors. Psychology, like psychiatry, was jealous of its status as a scientific discipline; psychology attempted to adhere to an experimental and quantitative method and opposed ideas that smacked of romanticism (e.g. the unconscious, dreams, etc.). The subject was committed, by and large, to the idea of a neurological substrate for psychological phenomena. Academic psychologists were psychologists of consciousness and, even where they conceded the existence of an unconscious, viewed its properties as unknowable. Psychologists generally mistrusted data coming from outside their own field and some of them such as Kulpe, even asserted that "it seems more likely . . . that general psychology may be able to throw some light upon their ['mental diseases'] rise, development, and causes, than that their study will afford any material aid to the student of psychology" (p. 213).

Part III of the book examines the response of the educated public. By 1900 Decker tells us, the notion of the unconscious (at least among non-physicians and non-psychologists) was a "commonplace" and the interest in sexuality was growing enormously. Because of this, "Freud's assumption of the existence of an unconscious provoked little argument in the lay literature" (pp. 262-263), and his ideas on sexuality were accepted (though not always understood) by many social theorists and reformers including Bloch, Ehrenfels, and Lowenfeld. In one area, namely that of dreams, Freud's theories received a much better reception from laymen than from doctors and psychologists. The response to *The Interpretation of Dreams* (1900) and *On Dreams* (1901) included "short book reviews, discursive articles built on Freud's ideas, long review articles on current scientific work on dreams and educational articles on basic concepts of psychoanalysis which included information on dreams" (p. 278). The subject that received the most attention was Freud's premise of the dream as fulfilled wish, only one commentator disagreeing with Freud's explanation.

In the conclusion of her book Decker makes it plain that although she has sought to dispel the myth of the early total rejection of psychoanalysis, she does not deny that ultimately psychoanalysis did not appreciably influence German medicine, psychology, or culture. She attributes this to a variety of factors including the "idealistic legacies of mind-body dualism and belief in the limits of human knowledge," the "positivistic rebellion against philosophy," the "repressive force of conventional attitudes," and the "regressive ravages of National Socialism" (pp. 328-329).

In summary, Decker's volume explores a relatively neglected aspect of the history of psychoanalysis and helps lay to rest yet another of the many myths about Freud's work. It is only through papers and monographs of this sort that the remaining gaps in our knowledge of the development of psychoanalysis will be closed.

Reviewed by EDWIN R. WALLACE, M.D., Assistant Professor, Department of Neuropsychiatry, University of South Carolina, Columbia, S.C.

G. D. HARGREAVES, (Compiler). *A Catalogue of Medical Incunabula in Edinburgh Libraries*. Edinburgh: The Royal Medical Society, Printed by Oxford University Press, 1976. xiv + 54 pp. Ill. £4.00.

The ancient Royal Medical Society of Edinburgh, probably the most distinguished of student societies, is promoting an admirable scheme to catalogue the historic medical books in the city's main libraries. The first product has been this excellent record of the fifteenth-century printed books in nine libraries, listing by chance exactly one hundred editions. These ancient books appeal more perhaps to the bibliophile than the historian. Mr. Hargreaves, who spent three years on special assignment to the task, provides all the information a student of early printing could ask, and clearly explains his method of description and reference to standard authorities. The Catalogue itself is a model of elegant exposition. The choice selection does not offer the medical historian a survey of the period, but many items of great interest are here, from the beautiful Florentine Celsus of 1478 to a series of exceedingly rare astrologico-medical almanacs from the Crawford collection at the Royal Observatory, which list days favourable for phlebotomy. The compiler has assiduously noted previous ownerships, which show that some of these books have been in Scotland since they were newly published, while a few others belonged to famous Scottish medical men. The promised Catalogues for the later centuries will be even more welcome to the medical historian, and other cities will envy Edinburgh's achievement.

Reviewed by WILLIAM LEFANU, M.A., formerly Librarian, Royal College of Surgeons of England, London.

LEONE MCGREGOR HELLSTEDT, Ed. *Women Physicians of the World: Autobiographies of Medical Pioneers.* Washington and London: Hemisphere Publishing Corp; New York: McGraw-Hill, 1978. xv + 420 pp. Ill. $24.50

Edited by a former president of the Medical Women's International Association, this is a collection of 91 autobiographical sketches by women physicians in 27 countries. Having all been born between 1878 and 1911, they weren't exactly pioneers in medicine but were active in the early days of the national and international women's medical organizations. Very few of them are well known. They write about how they decided to become doctors, what problems they encountered (e.g. one lone woman studying anatomy at Bonn had to leave because of the Director of the Institute of Anatomy, "a courteous old gentleman who hoped for an amorous adventure with me"), and what they did after they got their degrees. All of them say that if they had to do it all over again, they would.

Reviewed by DORIS THIBODEAU, M.S., Librarian, The Johns Hopkins Institute of the History of Medicine, Baltimore, Md.

THE BULLETIN RECENTLY RECEIVED*

The Advance of the Dental Profession: A Centenary History of the British Dental Association, 1880-1980. London: British Dental Association, 1979. ix + 289 pp. Ill. £8.80.

Glenn R. Atwell and Ronald Elmer Batt. *The Chapel: A Comprehensive History of the Chapel and Pilgrimage of Our Lady Help of Christians, Cheektowaga, New York and of the Alsatian Immigrant Community at Williamsville, New York.* New York: The Holling Press, Inc., 1979. xviii + 290 pp. Ill.

William Bateson. *Problems of Genetics.* Historical introduction by G. Evelyn Hutchinson and Stan Rachootin. New Haven and London: Yale University Press, 1979. xxii + 258 pp. Ill. $4.95 (paperbound).

Claude Bernard. *Notes pour le rapport sur les progrès de la physiologie.* Presented with a commentary by M. D. Grmek. Paris, 1979. (Documents inédits du Collège de France, 2). 81 pp.

Bibliography of the History of Medicine. No. 14 - 1978. Maryland: U.S. Department of Health, Education, and Welfare, Public Health Service, National Institutes of Health, 1979. xi + 224 pp. $5.50.

Bollettino di Storia della Filosofia dell' Universita' degli studi di Lecce. (Vol. IV, 1976). Lecce, Italy: Edizioni Milella, 1978. 430 pp.

John Eyler. *Victorian Social Medicine: The Ideas and Methods of William Farr.* Baltimore, Maryland: Johns Hopkins University Press, 1979. x + 262 pp. $19.50.

Renée C. Fox. *Essays in Medical Sociology: Journeys into the Field.* New York: John Wiley and Sons, 1979. viii + 548 pp. $19.95.

Galen. *On Prognosis.* Edition, Translation and Commentary by Vivian Nutton. Berlin: Akademie-Verlag, 1979. (Corpus Medicorum Graecorum V 8, 1). 262 pp. $44.70.

H. L. Houtzager. *Medicyns, Vroedwyfs en Chirurgyns: Schets van de gezondheidszorg in Delft en beschrijving van het Theatrum Anatomicum Aldaar in de 16e en 17e eeuw.* Amsterdam: Rodopi, N.V., 1979. 133 pp. Ill. Hfl. 20.—

Caryl Dow Jorgensen and John E. Lewis. *The ABCs of Diabetes.* New York: Crown Publishers Inc., 1979. xii + 305 pp. $12.95 (cloth).

Brian Lawn (Editor). *The Prose Salernitan Questions: An Anonymous Collection Dealing with Science and Medicine Written by an Englishman c. 1200,* with an Appendix of the related Collections. London: Oxford University Press, 1979. xxviii + 416 pp. $85.00.

G. A. Lindeboom. *Haller in Holland: Het Dagboek van Albrecht von Haller van zijn verblijf in Holland (1725-1727).* Amsterdam-Holland: Rodopi N. V., 1979. 122 pp. Hfl. 25.—

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* The *Bulletin* reserves freedom of decision as to the publications to be included in this section. Items received, other than those assigned for review, are ultimately incorporated into the collection of the Institute of the History of Medicine.

Agi Lindgren. *Die 'aquae medicinales' des mittelniederdeutsche Gothaer Arzneibuches*. Stockholm, Sweden: Almquist & Wiksell International, 1979. (Acta Universitatis Stockholmiensis, Stockholmer Germanistische Forschungen, 24). 118 pp.

Gwyn MacFarlane. *Howard Florey: The Making of a Great Scientist*. New York: Oxford University Press, 1979. xvi + 396 pp. Ill. $18.95.

Harry Medovy. *A Vision Fulfilled: The Story of The Children's Hospital of Winnipeg, 1909-1973*. Winnipeg, Manitoba: Peguis Publishers Limited, 1979. xi + 156 pp. Ill. $6.50 (paperbound); $12.50 (cloth).

Frank Mevers (Editor). *The Papers of Josiah Bartlett*. Hanover, New Hampshire: The University Press of New England, 1979. xxxvii + 447 pp. $25.00.

The Osler Library. Montreal: Osler Library, McGill University, 1979. 64 pp. Ill. $10 + $1 handling and postage.

Sigismund Peller. *Not in my Time: A Story of a Doctor*. New York: Philosophical Library, Inc., 1979. xiv + 374 pp. $15.00.

Efraim Racker. *Science and the Cure of Diseases: Letters to Members of Congress*. New Jersey: Princeton University Press, 1979. xvi + 105 pp. $12.50 (cloth); $4.95 (paperbound).

Revista de Historia das Ideias. (Vol 1, 1977). Coimbra, Portugal: Universidade de Coimbra, 1977. 548 pp.

Charles G. Roland and Paul Potter. *An Annotated Bibliography of Canadian Medical Periodicals, 1826-1975*. Toronto, Canada: The Hannah Institute for the History of Medicine, 1979. xvii + 77 pp. Free of charge from: Hannah Institute for the History of Medicine, 50 Prince Arthur Avenue, Suite 105, Toronto, Canada M5R 1B5.

Fred Rosner (Editor). *Moses Maimonides' Glossary of Drug Names*. Ann Arbor, Michigan: University Microfilms International, 1979. li + 364 pp. $20.75.

Benjamin Rush. *My Dearest Julia: The Love Letters of Dr. Benjamin Rush to Julia Stockton*. New York: Neale Watson Academic Publication, Inc. xvii + 62 pp. Ill. $14.95.

Ekkehard Schroder. *Faktoren des Gesundwerdens in Gruppe und Ethnien*. Verhandlungen des 2. Rundgesprachs "Ethnomedizin" in Heidelberg vom 29 und 30. November 1974. (Beitrage zur Sudasien forschung, No. 30). Wiesbaden: Franz Steiner Verlag, 1977. 125 pp. DM 24.—

Michael B. Shimkin. *Contrary to Nature*. Bethesda, Maryland: U.S. Department of Health, Education and Welfare, Public Health Service, National Institutes of Health, 1977. Reprinted 1979. xx + 498 pp. Ill.

Hans Skov (Translator). *Petrus Severinus og hans idea medicinae philosophicae· En dansk paracelsist*. Introduction and commentary by E. Bastholm. Copenhagen: Odense Universitetsforlag, 1979. (Acta Historica Scientiarum Naturalium et Medicinalium, Editit Bibliotheca Universitatis Hauniensis, Vol. 32). 299 pp.

Anselm L. Strauss (Editor). *Where Medicine Fails*. New Brunswick, New Jersey: Transaction Books, 1979. 296 pp. $4.95.

Frank J. Sulloway. *Freud, Biologist of the Mind*. New York: Basic Books, 1979. xxvi + 612 pp. Ill. $20.00.

Ian R. Tyrrell. *Sobering Up: From Temperance to Prohibition in Antebellum America, 1800-1860.* Westport, Connecticut: Greenwood Press, 1979. xii + 350. $23.95.

Charles Webster (Editor). *Health, Medicine and Mortality in the Sixteenth Century.* New York: Cambridge University Press, 1979. xiii + 394 pp. Ill. $39.95.

Ruth Winter. *Cancer-Causing Agents: A Preventive Guide.* New York: Crown Publishers, Inc., 1979. vi + 256 pp. $10.95 (cloth); $6.95 (paperbound).

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Victorian Social Medicine

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